

20201202 - December's Specifications Committee Meeting

December Specifications Committee Meeting Agenda

Meeting Date

Wednesday, December 2, 2020 @ 9:00am

Skype Meeting. E-mail distribution message includes instruction.

Approved Permanent Specification changes from last Committee meeting (10/7/20)

- **Section 625-Rock Socketed Drilled Shaft** A complete section rewrite.
- Three related spec changes related to Alkali-Silica Reaction (ASR).
 - **601.3.1.1- Mix Design Using Potentially Reactive Aggregates**
 - **501.3-Proportioning**
 - **603.6.2-Mix Design**
- **604.12-Inspection and Acceptance** Further defines the rigid & flexible pipe criteria; and testing of the pipe.
- Two items related to Winter Grade Asphalt Patching Materials.
 - **Section 412-Winter Grade Asphalt Patching Mixture**
 - **SP412-Winter Grade Asphalt Patching Mixture**
- **604.2-Materials, 604.1.1-Pipe Culverts Installed Using CLSM, and 604.8.2-Final Backfill** Update adds Random Material to the material table; revises the trench width of type F trench, and clarifies the final backfill requirements.
- **636.3-Control of Traffic Through Work Areas, Subsection 636.25-Pay Items** Updates temporary barrier and temporary guardrail barrier language; also updates Temporary Barrier pay item.
- Two items related to use of dual units in spec book; require only US customary
 - **105.4-Coordination of Plans, Specifications, Supplemental Specifications, and Special Provisions**
 - Discontinued use of Dual Units in next Standard Specification book
- Two specification changes related to countersignatures of WV Agent.
 - **103.6.5-Countersignature of West Virginia Agent**
 - **107.8.2.2-Railroad Protective Liability Insurance**
- **108.7.2-Interim Completion Date** The update is to clarify that the standard liquidated damages are to be used for Interim Completion Date, unless otherwise specified.
- **219.4.1-Proportioning and 219.4.2-Testing** Moves the pH testing requirement to the mix design development phase instead of construction
- Two proposed specification changes related to concrete batch plant scales, adding reference MP 700.00.30.
 - **501.5.2.3-Scales**
 - **601.5.2.4-Scales**
- Two specification changes related to anchoring of mulch
 - **642.2-Materials, 642.2-Materials, 642.5.4-Mulch, Fertilizer and Lime, and 642.7-Method of Measurement**
 - **652.2-Materials, 652.6.2-Straw Mulch, and 652.9-Method of Measurement**

Approved Project Specific Special Provisions (SP) from last Committee meeting (10/7/20)

- **SP627-Modular Expansion Joint**
- **SP613-Spray Applied and Spin-Cast Pipe Lining**
- **SP412-Winter Grade Asphalt Patching Mixture**
- **SP601-Lightweight Class H Concrete**

- SP607-High Tension Cable Barrier
- SP622-Nail Laminated Timber Deck
- SP672-Construct Building

Items removed from Committee Agenda

- SP for DBE

Old Business - Provisions discussed at last Committee meeting

SECTION	TITLE	DESCRIPTION
720	720.5.4-Schedule 3 NHS Pavement Projects 720.6-Non-NHS Pavement Projects	<p>5th time to committee; discussed in April, June, August, & October.</p> <p>Proposed specification change to Section 720. It removes invalid MP reference; updates the IRI / \$ adjustment table of schedule 3 NHS Pavement Projects; and revises non-NHS route requirements.</p> <p>Specification has been updated; per comments at the last meeting on testing of new construction. A redline copy, showing the proposed changes/updates to specification is included.</p> <p>There was a meeting with WVDOH personnel and industry related to these spec changes in late-June.</p> <p><i>Approval is expected in December.</i></p>
609	Section 609	<p>3rd time to Committee; discussed in August & October.</p> <p>Proposed specification change to eight subsections of Section 609 (609.1-Description, 609.2.1-Detectable Warning Surface, 609.3-Subgrade Preparation, 609.6-Mixing and Placing Concrete, 609.7-Expansion Joints, 609.8-Finishing, 609.9-Method of Measurement, and 609.10-Basis of Payment). The revision updates curb ramp requirements.</p> <p>Specification has been updated; it is redline copy, showing the proposed changes/updates to the specification.</p> <p><i>Approval is expected in December.</i></p>
636	636.23-Method of Measurement	<p>3rd time to Committee; discussed in August & October.</p> <p>Proposed specification change to Section 636. It removes reference to 4 inch lines from the method of measurement of the three subsections below:</p> <ol style="list-style-type: none"> 1. 636.23.8-Eradication of Pavement Marking <ul style="list-style-type: none"> ○ Specification updated; footnote added. 2. 636.23.9-Temporary Pavement Markings-Paint <ul style="list-style-type: none"> ○ No update to the specification. 3. 636.23.10-Temporary Pavement Markings-Tape <ul style="list-style-type: none"> ○ No update to the specification. <p>Specification is redline copy, showing the proposed changes/updates to specification is included.</p> <p><i>Approval is expected in December.</i></p>

<p>101</p> <p>101.2-Definiations</p>	<p>105</p> <p>105.16.2-Final Acceptance</p> <p>108</p> <p>108.6.1-General</p> <p>109</p> <p>109.8-Acceptance and Final Payment</p>	<p>2nd time to Committee; discussed in October.</p> <p>Four proposed specification changes related to finalization of projects.</p> <ol style="list-style-type: none"> 1. Proposed specification change to Section 101. The 101.2 update revises the definition of Substantially Complete such that all items of work must be done and adds Completion definition. <ul style="list-style-type: none"> ○ No update to the specification. 2. Proposed specification change to Section 105. Subsection 105.16.2 is updated to specify 180 days for project finalization. <ul style="list-style-type: none"> ○ Specification has been updated; adding 105.16.2.1 for punch list requirements 3. Proposed specification change to Section 108, subsection 108.6.1. The revision updates substantially complete to correlate with definition. <ul style="list-style-type: none"> ○ No update to the specification. 4. Proposed specification change to Section 109. Subsection 109.8 is revised; for 30 days to execute the final estimate. <ul style="list-style-type: none"> ○ No update to the specification. <p>All of the specification changes are redline copy, showing the proposed changes/updates to the specification.</p> <p>Approval is expected in December.</p>
<p>109</p>	<p>109.1-Measurement of Quantities & 109.20-Load Limit Violations and Weight Tickets</p>	<p>2nd time to Committee; discussed in October.</p> <p>Proposed specification change to Section 109. The change is to facilitate use of e-ticketing.</p> <p>No update to the specification; it is redline copy, showing the proposed changes/updates to the specification.</p> <p>Approval is expected in December.</p>
<p>107</p> <p>207</p> <p>211</p>	<p>107.21.1-Erosion and Sedimentation Control</p> <p>207.6.3.1-Waste Within WVDOT Right-of-Way</p> <p>211.3.1-Borrow within WVDOT R/W Limits & 211.3.3-Impervious Core</p>	<p>2nd time to Committee; discussed in October.</p> <p>Three proposed specification changes related to WVDOT adoption of the WVDEP Erosion and Sediment Control Manual. The revision removes references to the WVDOT publication and replaces it with the WVDEP one.</p> <ol style="list-style-type: none"> 1. Proposed specification change to Section 107, subsection 107.21.1 2. Proposed specification change to Section 207, subsections 207.6.3.1 3. Proposed specification change to Section 211, subsection 211.3.1 and 211.3.3 <p>No update to the specification; it is redline copy, showing the proposed changes/updates to each specification is included.</p> <p>Approval is expected in December.</p>

212	SP212 - Shoring, Causeway	<p>2nd time to Committee; discussed in October. Special provision for Shoring, Causeway.</p> <p>No update to the SP.</p>
403	SP403 - Crack Sealing in Asphalt Pavement	<p>2nd time to Committee; discussed in October. Special provision for crack sealing in asphalt pavement.</p> <p>The provision has been updated and is redline copy showing the revisions from last meeting.</p>
504	<p>Section 504-Bituminous Underseal for Concrete Pavement</p> <p>SP504 - Asphalt Underseal for Concrete Pavement</p>	<p>2nd time to Committee; discussed in October. Two items related to Bituminous Underseal for Concrete Pavement. The revision will remove it from specifications and make it project specific special provision. Section 504 pay items have had no use in past 10 years and Section 512-Concrete Slab Stabilization is similar procedure & probably better for this, if needed.</p> <ol style="list-style-type: none"> 1. Removal of entire Section 504 from specifications. 2. Language added to Special Provision. <p>No updates to specification or SP.</p> <p>Approval is expected in December.</p>
601	601.3.2.3-Yield	<p>2nd time to Committee; discussed in October. Proposed specification change to Section 601. The revision requires yield tests by the WVDOH field inspector.</p> <p>No update to the specification; it is redline copy, showing the proposed changes/updates to each specification is included.</p> <p>Approval is expected in December.</p>
603	603.2.1-Inspection and Testing & 603.6.2.1-Class S-P Concrete Mix Design Testing:	<p>2nd time to Committee; discussed in October. Proposed specification change to Section 603. The revision adds certification requirements for QC personnel at concrete fabricators.</p> <p>No update to the specification; it is redline copy, showing the proposed changes/updates to each specification is included.</p> <p>Approval is expected in December.</p>
606	606.2-Materials & 606.2.3-Free Draining Base Trench	<p>2nd time to Committee; discussed in October. Proposed specification change to Section 606. The revision adds Outlet pipe material reference to 606.2 & updates reference to outlet pipe in 606.2.3.</p> <p>No update to the specification; it is redline copy, showing the proposed changes/updates to each specification is included.</p> <p>Approval is expected in December.</p>

615	SP615 - Alternative Technical Concept	<p>2nd time to Committee; discussed in October. Special provision for Alternative Technical Concept of Steel Superstructure elements: causeway shoring, temporary falsework, and jacking of steel superstructure.</p> <p>No update to the SP.</p>
626	626.7-Method of Measurement	<p>2nd time to Committee; discussed in October. Proposed specification change to Section 626. The revision updates the method of measurement subsection, to clarify that the retaining wall items are as determined by the plan quantity.</p> <p>Specification has been updated per comments at the last meeting. It is redline copy, showing the proposed changes/updates to the specification.</p> <p>Approval is expected in December.</p>
636	636.6.2-Shadow Vehicle, 636.12-Temporary Impact Attenuating Device, & 636.25-Pay Items	<p>2nd time to Committee; discussed in October. Proposed specification change to Section 636. The revision updates the shadow vehicle and temporary impact attenuating devices requirements, to meet MASH requirements.</p> <p>Specification is redline copy, showing the proposed changes/updates to the specification.</p> <p>Approval is expected in December.</p>
642	642.1-Description, 642.4-General Requirements, & 642.7-Method of Measurement	<p>2nd time to Committee; discussed in October. Proposed specification change to Section 642-Temporary Pollution. The revision removes 'check dam' item and references from the specification.</p> <p>Specification is redline copy, showing the proposed changes/updates to the specification.</p> <p>Approval is expected in December.</p>
663	Section 663 - Pavement Markings and Rumble Strips	<p>2nd time to Committee; discussed in October. Proposed specification change to Section 663. The revision adds rumble strip item to the section (this information is currently in Section 664 & being removed from there).</p> <p>Specification is redline copy, showing the proposed changes/updates to the specification.</p> <p>Approval is expected in December.</p>

<p>664</p> <p>Section 664 - Impact Attenuators</p>	<p>715</p> <p>715.41-Impact Attenuators</p>	<p>2nd time to Committee; discussed in October.</p> <p>Proposed specification change to Section 664. It is a complete section re-write. The revision consolidates the various proprietary items into one generic specification. Specification has been updated; it is redline copy, showing the proposed changes/updates to the specification.</p> <p>Also included is the material subsection for Impact Attenuator - 715.41. No update to the subsection; it is a complete subsection re-write. The proposed specification is attached.</p> <p>Approval is expected in December.</p>
<p>715</p>	<p>715.9.3.1-Drums</p>	<p>2nd time to Committee; discussed in October.</p> <p>Proposed specification change to Section 715; for the material subsection 715.9.3.1-Drums. Which would permit tire ring collars for drums in addition to the snap-on bases we have previously allowed.</p> <p>No update to the specification; it is redline copy showing the proposed changes/updates.</p> <p>Approval is expected in December.</p>
<p>604</p> <p>714</p>	<p>604.2-Materials & 604.15-Pay Items</p> <p>714.8-Concrete Safety Slope End Sections</p>	<p>1st time to Committee.</p> <p>Proposed specification change to Section 604. The revision adds Concrete Safety Slope End Section and updates pay item for it.</p> <p>Also included is the material subsection for Concrete Safety Slope End Sections - 714.8.</p> <p>Both specification has been updated. They are redline copy, showing the proposed changes/updates.</p> <p>Approval is expected in December.</p>

New Business - New Provisions for Spec Committee

SECTION	TITLE	DESCRIPTION
105	SP105-Dates of Governing Specifications and Standard Details	<p>This is an update to previously approved SP. 1st time to committee. Project specific special provision overriding the dates for the Specifications and Standard Details. The special provision would be added to project proposals and will alleviate need for the designer updating plan notes with the manuals are revised and project has already been PS&E'd.</p> <p>The provision is redline copy showing the changes/updates to the special provision</p>
636	SP636-Temporary CCTV	<p>This is an update to previously approved SP. 1st time to committee. Project specific special provision for CCTV in work zones. The update includes the SIM card cost with the item.</p> <p>The provision is redline copy showing the changes/updates to the special provision</p>
307	307.2-Materials	<p>1st time to committee. Proposed specification change to Section 307. The revision removes reference to 704.6.3, which contradicts supplemental specification 307.2.4.1.2 and outlines the testing requirements.</p> <p>The specification is redline copy showing the proposed changes/updates.</p>
601	601.2-Materials	<p>1st time to committee. Proposed specification change to Section 601. The revision adds concrete sealer material reference.</p> <p>The specification is redline copy showing the proposed changes/updates.</p>
603	603.15-Pay Items	<p>1st time to committee. Proposed specification change to Section 603. The revision corrects the unit of deck panel items to square foot, as that's how it is listed in method of measurement subsection.</p> <p>The specification is redline copy showing the proposed changes/updates.</p>
636	636.19.4-Placement	<p>1st time to committee. Proposed specification change to Section 636. The revision updates the placement requirements of Portable Message Signs. corrects the unit of deck panel items to square foot, as that's how it is listed in method of measurement subsection.</p>
704	704.6.2-Gradation, Quality, and Crushed Particle Requirements & 704.6.3-Sampling, Testing and Acceptance Procedure	<p>1st time to committee. Proposed specification change to Section 704. The revision moves Table 704.6.2 from within 704.6.3 to the end of subsection 704.6.2.</p> <p>The specification is redline copy showing the proposed changes/updates.</p>

Comments

Comments are requested on these Specifications Changes and Project Specific Special Provisions.

Please share your comments by November 30, 2020, they help in the decision making process.

Please Send Comments to: DOHSpecifications@wv.gov

Deadline for new items & updates to these provision is January 8, 2021.

If you are the 'champion' of any specification changes and/or project specific special provisions currently in the Specification Committee, it is your responsibility to edit/update/modify them in a timely manner per comments and discussion in Spec Committee. *Failure to submit updates may result in removal of item and/or delays.*

Next Meeting

Wednesday, February 3, 2021 at 9:00 a.m.

Skype Meeting and/or Group meeting location is in Building 5, Room 855 (*meeting invite will include details.*)

2017 Standard Specification Roads and Bridges & 2020 Supplemental Specifications

Electronic Copy (pdf): The 2017 Standard Specifications Roads & Bridges & 2020 Supplemental Specifications can be viewed, printed, or downloaded from the Specifications Website. A link to the Specifications pages is here:

<http://transportation.wv.gov/highways/contractadmin/specifications>

Print Version: Hard copies of the 2017 Standard Specifications Roads and Bridges & 2020 Supplemental Specifications are available thru Contract Administration. An order form for the book is on Specifications Website. A link to the page is here:

<http://transportation.wv.gov/highways/contractadmin/specifications>

2021 Supplemental Specifications

2021 Supplemental will go into effect on all projects let after 1/1/20. It will be posed on the specifications webpage around mid-December. Hard copy will be available in early 2021.

2021 Specifications Committee

The Specification Committee typically meet every other month; on the first Wednesday. 2021 meetings will be held in February (2/3), April (4/7), June (6/2), August (8/4), October (10/6), and December (12/1).

Calendar subject to change, updates will be given, as needed.

Specifications Committee Website

A copy of the meeting agenda can be found on the Specifications Committee Website

<http://transportation.wv.gov/highways/contractadmin/specifications>

Materials Procedures

Material Procedures (MPs) referenced in provisions are available upon request.

For questions regarding the Standard Specifications Road and Bridges, Supplemental Specifications, Project Specific Provisions, or the Specifications Committee please email

DOHSpecifications@wv.gov

File Format Structure and Progression of items thru Specifications Committee

The purpose of the below protocol is to provide guidance on the file structure of Proposed Specifications & Project Specific Provisions as they progress thru Specifications Committee. This procedure would facilitate a means of tracking changes from meeting to meeting; as the agenda & provisions are posted publicly online on the Spec Committee website.

TYPES OF PROVISIONS:

There are three standard types of provisions typically discussed in committee:

1. Specification Changes – These are permanent changes to the WVDOT Standard Specifications.
 - Unless inserted into a project proposal, these changes typically go into effect in January (of subsequent year) with the Supplemental Specifications
2. Project Specific Special Provisions (SP) – Are applied to specifically designated projects.
3. Updates to previously approved SP – Changes/edits/updated to SP that have been approved by spec committee.

NEW BUSINESS ITEMS:

New items should be setup & submitted in the following format:

1. Specification Changes – Show as red-line copy (see note)
2. Project Specific Special Provisions (SP) – Will be shown in all black.
3. Updates to approved SP – Shown as red-line copy.

Each item should also include a description with:

- Brief overview of item
- Background info and/or reason for change

NOTE: Red-line copy is a form of editing which indicates removal or addition of text. You can redline a Microsoft Word document by using the built-in “Track Changes” feature or you can manually reline document with font color changes & strike-through.

OLD BUSINESS ITEMS:

Updated provisions that were discussed at the last committee meeting should be setup in the following format:

- Redline copy from prior meeting would not be shown
- Redline copy of new changes/updates (from previous meeting)

PROGRESSION OF ITEMS THRU COMMITTEE AND APPROVAL:

Depending on how important the project and/or comments/discussion of item at previous meeting, then several things can happen in no particular order.

- Few comments/discussion/minor changes...will recommend approval of item at next meeting
- A lot of comments/discussion...will not recommend approval at next meeting; item will be updated and reviewed again at the next meeting.
- SP's in committee may be used in advertised project. Hope to work to address comments & finish approving at subsequent meeting.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 720 SMOOTHNESS TESTING

720.4-RIDE QUALITY ANALYSIS:

720.4.4-Rounding:

DELETE THE ENTIRE SUBSECTION 720.4.4.

720.5-NATIONAL HIGHWAY SYSTEM (NHS) PAVEMENT PROJECT:

720.5.4-Schedule 3 NHS Pavement Projects:

DELETE THE CONTENTS OF THE 720.5.4 AND REPLACE WITH THE FOLLOWING:

NHS pavement projects with a pavement thickness less than three (3) inches and more than one (1) inch shall be classified as Schedule 3 NHS Pavement Projects. The final price adjustments for Schedule 3 NHS Pavement Projects shall be determined using the calculations shown in Table 720.5.3. Payment for any bonus on a project shall require the average IRI for the entire project to be 67 in/mi or less.

TABLE 720.5.4
Schedule 3 NHS Pavement Projects

IRI for each 0.1-mile section (in/mi)	Price Adjustment (\$)
46.0 or Less	+300
46.1 to 76.0	-10 (IRI) + 760
76.1 to 80.0 or Greater	0
<u>80.1 to 120.0</u>	<u>1,200 – 15 (IRI)</u>
<u>120.1 or Greater</u>	<u>-600</u>

720.6-NON-NATIONAL HIGHWAY SYSTEM PAVEMENT PROJECTS:

DELETE THE CONTENTS AND REPLACE WITH THE FOLLOWING

Pavement projects located on any Non-NHS routes shall be tested with equipment outlined in 720.2.1, 720.2.2 and 720.3 if the project meets all four of the following requirements:

1. Resurfacing is the primary project type
2. Greater than ~~0.2 miles~~ 1 mile of continuous pavement,
3. Edge lines and center line on the new pavement in accordance with Section 663.
4. Thickness of one inch (1) or more of new pavement (including scratch if used)

720.6.1-Ride Quality Analysis Before Project:

DELETE THE CONTENTS AND REPLACE WITH THE FOLLOWING

Non-NHS pavement projects shall be tested before the pavement project begins. Any new construction of a Non-NHS route will be evaluated as an NHS route according to 720.5.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 609 SIDEWALKS

609.1-DESCRIPTION:

DELETE THE CONTENTS OF THE SUBSECTION AND REPLACE THE FOLLOWING.

This work shall consist of the construction of Portland cement concrete sidewalks and curb ramps in accordance with these Specifications and in reasonably close conformity with the lines and grades shown on the Plans or established by the Engineer.

609.2-MATERIALS:

609.2.1-Detectable Warning Surfaces:

DELETE THE CONTENTS OF THE SUBSECTION AND REPLACE THE FOLLOWING.

Detectable warning panels shall have a detectable warning surface meeting Proposed Accessibility Guidelines for Pedestrian Facility in Public Right of Way (PROWAG), latest edition, requirements. The panel dimensions shall not deviate more than 1/16 in (3 mm). The panel colors shall be as shown in the plans or as approved by the Engineer. ~~The color shall contrast to the adjacent sidewalk, sidewalk flares and pavement. The panel shall contrast visually with adjacent gutter, street or highway, or curb ramp surface, either light-on-dark or dark-on-light.~~ The panels shall maintain a minimum skid resistance of 0.60 wet when tested with ASTM C 1028.

There shall be two types of warnings surfaces: panels for fresh concrete surfaces while the concrete is still plastic and products-panels for cured concrete surfaces. ~~A wet or plastic set-in-place system shall be installed at the time of the placement of the sidewalk, while the concrete is still plastic.~~ Mold-in-place concrete domes, brick pavers, tiles, or iron or steel warning systems shall not be used. Products-Detectable warning panels must be approved and on the WVDOH Approved Products List. The material approval for detectable warning panels will be based on results from WVDOH field evaluation tests. ~~Detectable warning systems may also be accepted or rejected or~~ based on actual performance on WVDOH projects. All materials to be used shall be covered by a 5 year manufacturer warranty under normal conditions.

609.3-SUBGRADE PREPARATION:

DELETE THE FIRST PARAGRAPH AND REPLACE WITH THE FOLLOWING.

The subgrade shall be constructed true to grade and cross section as shown on the Plans or directed by the Engineer. It shall be watered, if required, and thoroughly compacted before placing the concrete or bed course material. All soft ~~and-or~~ yielding material shall be removed and replaced with suitable material.

609.6-MIXING AND PLACING CONCRETE:

ADD THE FOLLOWING PARAGRAPH TO THE END OF THE SUBSECTION.

Curb ramp and adjacent curb or curb and gutter may be constructed monolithically, with the approval of the Engineer. The monolithic or integral curb ramp threshold and adjacent curb are required to be poured at the proper depth as per PVT-6.

609.7-EXPANSION JOINTS:

DELETE THE THIRD PARAGRAPH AND REPLACE WITH THE FOLLOWING.

Expansion Joints shall be provided around all ~~sidewalk-curb~~ ramps and ramp flares.

609.8-FINISHING:

609.8.1-Concrete:

DELETE THE THIRD PARAGRAPH AND REPLACE WITH THE FOLLOWING.

The surface of sidewalks shall be marked into rectangles of not less than 12 sq. ft. (1 sq. m) with a scoring tool which will form ~~dummy-contraction~~ joints and rounded sidewalk edges. The ~~dummy-contraction~~ joints shall extend into the concrete 1 inch (~~9-25~~ mm) depth and shall be approximately 1/8 inch (3 mm) wide.

609.8.2 Detectable Warning Surface:

DELETE THE CONTENTS OF THE SUBSECTION AND REPLACE WITH THE FOLLOWING.

All curb ramps shall include detectable warning surface across the full width of the curb ramp where the flush threshold meets the gutter or pavement (excluding any flared sides) or as shown on the plans or established by the Engineer. ~~The detectable warning panels may be designed for placement while the concrete is plastic or after the concrete has cured. A wet or~~

~~plastic-set-in- place anchored detectable warning surface system shall be installed at the time of the placement of the sidewalk curb ramp, while the concrete is still plastic. The sidewalk concrete shall cure a minimum of 72 hours prior to placement of the detectable warning surface. The area where the surfaces are to be installed in shall be thoroughly cleaned and allowed to dry. The panel shall contrast visually with adjacent gutter, street or highway, or curb ramp surface, either light-on-dark or dark-on-light. A concrete border, if necessary for installation, shall not exceed 2 inches. Detectable warning surfaces are intended to provide a tactile equivalent underfoot of the visible curb line. If detectable warning surfaces are placed too far from the curb line because of a large curb radius, the location may compromise effective crossing. Detectable warning surfaces should be placed at the back of the curb line (or as shown on the plans or established by the engineer) and shall not be placed on paving or expansion joints. A single detectable warning surface panel shall be used with curb ramp widths of 5 feet or less. Where detectable warning surface panels are cut to conform to a specific shape of ramp and anchoring devices become part of the waste, the anchor will be removed and reattached into the detectable warning surface at the original edge offset as per manufacturer. The joints between the panels shall not exceed 1/8 inch. The panels shall not deviate more than 1/16" from the finished grade of the ramp surface. The grade will be measured from the top of the panel excluding any texture. The panels shall be installed and cut as recommended by the manufacture. Where parts of more than one panel are used to conform to a specific shape, all panel pieces shall be of the same color. Where possible, the~~ domes shall be aligned in the direction of pedestrian travel.

609.9-METHOD OF MEASUREMENT:

DELETE THE CONTENTS OF THE SUBSECTION AND REPLACE WITH THE FOLLOWING.

Sidewalks will be measured in square yards (meters), complete in place and accepted, which will be determined by the length measured upon the surface times the width constructed, as authorized by the Engineer. Removal of existing sidewalks and any excavation shall be considered Unclassified Excavation and shall be paid as specified in Section 207. ~~Detectable warning surfaces shall be measured and paid for separately complete in place and accepted.~~ Sidewalk Bed course material will be measured by the cubic yard (meter), complete in place and accepted.

Curb Ramps will be measured and paid for separately complete in place and accepted. Curb Ramp item includes all concrete for curb ramp (including curb, curb and gutter, curb wall or cheek wall, etc.) as shown in Standard Details. Removal of existing curb ramp, existing partial sidewalks necessary for curb ramp replacement, and any excavation shall be incidental. Curb Ramp bed course material will be measured by cubic yard, complete in place and accepted on new curb ramp construction. Detectable warning surfaces shall be measured and paid for separately complete in place and accepted.

Where a driveway crosses a sidewalk, the intersecting area shall be constructed to the driveway typical section and shall be measured and paid for the entire length of the driveway and transitions by the pay items shown in the driveway typical section or the Standard Details.

609.10-BASIS OF PAYMENT:

609.10.1-Price Adjustment:

DELETE THE FIRST SENTENCE OF THE SUBSECTION AND REPLACE WITH THE FOLLOWING.

Bed course material not conforming to the gradation requirements as described in 609.2.5.1 will be paid for at the adjusted contract price based on the degree of nonconformance as specified in Table 609.10.1.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 636
MAINTAINING TRAFFIC**636.23-METHOD OF MEASUREMENT:**

DELETE THE CONTENTS OF SUBSECTIONS 636.23.8, 636.23.9, AND 636.23.10 AND REPLACE WITH THE FOLLOWING:

636.23.8-Eradication of Pavement Marking: The quantity of "Eradication of Pavement Markings" shall be the equivalent linear-square feet (meters) of ~~4 inches (100 mm) solid line actually line, symbol, and arrow material~~ removed from the pavement. ~~As an example, an 8 inches (200 mm) solid line would double the linear quantity.~~ Quantity calculations shall be based on design widths of markings and the following tables, and shall not be based on field measurements of actual line widths which may be slightly less or greater than the design width due to overspray or spray guns being slightly out of adjustment. Additional quantity shall not be added for additional effort required for removal of remnants of previously applied markings left exposed due to non-precise retracement.

<u>Description</u>	<u>Value of Square Feet</u>
<u>Edge Lines, Lane Lines, Centerline, Channelizing Lines, Stop and Crosswalk Lines, Stripes, Curb and Island Markings</u>	
<u>6-inch Line</u>	<u>= # of feet of 6-inch line removed / 2</u> <u>Example: 10 feet of 6-inch line removed / 2 = 5 SF</u>
<u>8-inch Line</u>	<u>= # of feet of 8-inch line removed / 1.5</u> <u>Example: 10 feet of 8-inch line removed / 1.5 = 6.7 SF</u>
<u>12-inch Line</u>	<u>= # of feet of 12-inch line removed x 1</u> <u>Example: 10 feet of 12-inch line removed x 1 = 10 SF</u>
<u>24-inch Line</u>	<u>= # of feet of 24-inch line removed x 2</u> <u>Example: 10 feet of 24-inch line removed x 2 = 20 SF</u>

<u>Description</u>	<u>Standard Detail Sheet *</u>	<u>Value of Square Feet</u>
<u>Symbol Markings</u>		
<u>Yield Triangle</u>	<u>TEM-3 (sh 2 of 3)</u>	<u>2.8</u>
<u>Handicapped Symbol</u>	<u>TEM-5</u>	<u>16.0</u>
<u>Bicycle Symbol</u>	<u>TEM-3 (sh 2 of 3)</u>	<u>6.0</u>
<u>Arrows</u>		
<u>One Direction (Left/Right Turn) Arrow</u>	<u>TEM-3 (sh 1 of 3)</u>	<u>17.0</u>
<u>Straight Arrow</u>	<u>TEM-3 (sh 1 of 3)</u>	<u>12.0</u>
<u>Multi Direction Arrow</u>	<u>TEM-3 (sh 1 of 3)</u>	<u>29.0</u>
<u>Wrong Way Arrow</u>	<u>TEM-3 (sh 1 of 3)</u>	<u>24.0</u>
<u>Lane Drop Arrow</u>	<u>TEM-3 (sh 1 of 3)</u>	<u>42.0</u>
<u>Roundabout with One Arrow, LE</u>	<u>TEM-3 (sh 3 of 3)</u>	<u>28.0</u>
<u>Roundabout with One Arrow, TE</u>	<u>TEM-3 (sh 3 of 3)</u>	<u>31.0</u>
<u>Roundabout with One Arrow, RE</u>	<u>TEM-3 (sh 3 of 3)</u>	<u>15.0</u>
<u>Roundabout with Multiple Arrows, LTRE</u>	<u>TEM-3 (sh 3 of 3)</u>	<u>43.0</u>
<u>Roundabout with Multiple Arrows, LRE</u>	<u>TEM-3 (sh 3 of 3)</u>	<u>36.0</u>
<u>Roundabout with Multiple Arrows, LTE</u>	<u>TEM-3 (sh 3 of 3)</u>	<u>39.0</u>
<u>Roundabout with Multiple Arrows, TRE</u>	<u>TEM-3 (sh 3 of 3)</u>	<u>39.0</u>
<u>Lane Letter</u>		
<u>“R X R”</u>	<u>TEM-3 (sh 2 of 3)</u>	<u>59.0</u>
<u>“SCHOOL”</u>	<u>**</u>	<u>34.0</u>
<u>“X-ING”</u>	<u>**</u>	<u>21.0</u>
<u>“ONLY”</u>	<u>TEM-3 (sh 2 of 3)</u>	<u>22.0</u>
<u>“STOP”</u>	<u>TEM-3 (sh 2 of 3)</u>	<u>23.0</u>
<u>“RIGHT”</u>	<u>TEM-3 (sh 2 of 3)</u>	<u>26.0</u>
<u>“LEFT”</u>	<u>TEM-3 (sh 2 of 3)</u>	<u>20.0</u>
<u>“TURN”</u>	<u>TEM-3 (sh 2 of 3)</u>	<u>24.0</u>
<u>“LANE”</u>	<u>TEM-3 (sh 2 of 3)</u>	<u>24.0</u>
<u>“YIELD”</u>	<u>**</u>	<u>24.0</u>

* WVDOH Standard Details Vol. II, latest edition

** Marking not included in the Standard Details. Value is based on 8 foot height lettering shown in the FHWA Standard Highway Signs and Markings book.

636.23.9-Temporary Pavement Markings-Paint: The quantity of “Temporary Pavement Markings-Paint” shall be the linear feet of ~~4 in. (100mm)~~, 6 in. (150 mm), or 8 in. (200 mm) solid line actually placed on the pavement.

636.23.10-Temporary Pavement Markings-Tape: The quantity of “Temporary Pavement Markings-Tape” shall be the linear feet of ~~4 in. (100mm)~~, 6 in. (150 mm), or 8 in. (200 mm) solid line actually placed on the pavement.

636.25-PAY ITEMS

DELETE ITEM 636007 “ERADICATION OF PAVEMENT MARKINGS” AND REPLACE WITH THE FOLLOWING:

ITEM	DESCRIPTION	UNIT
636007-*	Eradication of Pavement Marking	Linear-Square Foot (Meter)

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

**SECTION 101
DEFINITION OF TERMS**

101.2-DEFINITIONS:

Completion. Contractor completes all specified work satisfactorily and executes and delivers all required documents, certificates, and proofs of compliance.

Substantial Completion or Substantially Complete-The work on the Contract will be considered substantially complete when ~~the Project could be opened continuously for the safe, convenient, and unimpeded use of the traveling public, or the Project has met the intention of the plans~~ all Items of Work are complete, as ~~reasonably~~ determined by the Engineer; with the exception of permanent roadway striping.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 105
CONTROL OF WORK

105.16-ACCEPTANCE:

105.16.2-Final Acceptance: ~~Upon due notice from the Contractor of presumptive completion of the entire project, Once the Contractor completes all specified work satisfactorily and executes and delivers all required documents, certificates, and proofs of compliance, the Contractor shall provide written notice of completion to the Engineer. If the Engineer will make an inspection agrees the Project is substantially complete will notify the Contractor and will conduct a final inspection within 30 calendar days.~~

If ~~the Engineer determines that~~ all construction and other contractual requirements provided for and contemplated by the Contract ~~is found completed to satisfaction are satisfactorily completed~~, that inspection will constitute the final inspection. ~~The Engineer will make the final acceptance and notify the Contractor in writing of this acceptance. Final acceptance will be the date the Contract Completion Report is fully executed by the Division.~~

If, ~~however, the inspection discloses the Engineer determines~~ any work, in whole in part, ~~as being is~~ unsatisfactory, the Engineer will give the Contractor ~~the necessary instruction a punch list~~ for correction ~~of same~~ in writing, within 15 calendar days after inspection. ~~and the~~The Contractor shall immediately comply with and execute such instructions. The Contractor shall supply to the Engineer all material certifications, all documents necessary for project finalization, and agree to final quantities within 90 calendar days of punch list notice. If the Contractor fails to give notice of disagreement to the Engineer about any issue within 90 calendar days of punch list notice, including the reason for dispute and justification, the final payment will be based on the Engineer's list of final quantities. If the Contractor fails to provide material certification, the Division may deduct cost of material from the project. The Contractor shall complete all remaining punch list work within 135 calendar days of punch list notice. If the Engineer determines that the punch list is incomplete, the Division may withhold all payments on any and all Contracts. Upon timely correction of the work, another inspection will be made which will constitute the final inspection provided the Engineer determines that the work has been satisfactorily completed.

~~In such event, the~~The Engineer will make the final acceptance and notify the Contractor in writing of ~~this~~ acceptance. Final acceptance will be the date the Contract Completion Report is fully executed by the Division.

105.16.2.1-Punch List: The punch list will identify and include, but not be limited to,

~~September 24, 2020–November 17, 2020~~

any item of work that need corrected before Final Acceptance; all necessary material certifications; any unsigned change orders; any applicable certified payrolls; all certification of subcontractor payment; any applicable Proof of Payments needed for B&O tax; and any other item needed for finalization.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

**SECTION 108
PROSECUTION AND PROGRESS**

108.6-DETERMINATION AND EXTENSION OF CONTRACT:

108.6.1-General:

DELETE THE CONTENTS OF THE FIFTH PARAGRAPH AND REPLACE THE FOLLOWING:

The work on the Contract will be considered substantially complete when ~~the Project could be opened continuously for the safe, convenient, and unimpeded use of the traveling public, or the Project has met the intention of the plans~~ all Items of Work are complete, as reasonably determined by the Engineer; with the exception of permanent roadway striping. When the Project is considered substantially complete, the Contract time charges shall be discontinued prior to final acceptance being made by the Engineer as prescribed in 105.16.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 109

MEASUREMENT AND PAYMENT

109.8-ACCEPTANCE AND FINAL PAYMENT:

When the project has been accepted, as provided in 105.16, the Engineer will prepare the final estimate of the quantities of the various classes of work performed. Before the final payment is made, the Contractor shall execute the Statement of Acceptance on the back of the final estimate.

After the Contractor executes such final estimate or if the Contractor fails or declines to execute the final estimate within 30 calendar days after receipt, the Division will consider the estimate approved and accepted and ~~he Contractor~~ will be paid the entire sum found to be due after deducting all previous payments and all amounts to be retained or deducted under the provisions of the Contract.

If the Contractor disputes the final estimate, written notice must be provided to the Engineer within 30 calendar days after receipt, indicating the reason for disagreement and all documents, calculations, data or information supporting Contractor's position. Failure to provide timely notice and supporting information to the Engineer will constitute a waiver of Contractor's right to dispute the final estimate. Upon written request from the Contractor received within 30 days of his receipt of the final estimate, the time for review and execution of the final estimate ~~will be extended up to 60 additional calendar days~~ may be modified by mutual agreement of the Contractor and Engineer.

Should the Contractor desire to reserve the right to file a claim with the State Court of Claims for any sum or compensation not included in the final estimate, growing out of the Contract, then a Reservation of Right stipulating the nature, each item and the amount claimed shall be added at the end of the acceptance statement. This claim must be filed with the State Court of Claims within ~~120-60 calendar~~ days of execution of the final estimate. If any monies owed the Division are not paid within ~~120-60 calendar~~ days of the execution of the final estimate, the Division shall have the right to revoke the Contractor's Prequalification until the monies are paid.

All prior partial estimates and payments will be subject to correction in the final estimate and payment.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

**SECTION 109
MEASUREMENT AND PAYMENT**

109.1-MEASUREMENT OF QUANTITIES:

DELETE THE CONTENTS OF THE SUBSECTION AND REPLACE WITH THE FOLLOWING:

All work completed under the Contract will be measured by the Engineer according to United States standard measure.

The method of measurement and computations to be used in determining of quantities of materials furnished and of work performed under the Contract will be those methods generally recognized as conforming to good engineering practice.

Unless otherwise indicated, the requirements prescribed shall govern.

Earthwork will be computed by the average end area method, using the horizontal length measured along the centerline as the distance between sections, applying corrections for curvature where the apparent error exceeds 25 percent of the volume in any one cut. Other acceptable methods may be used.

Unless otherwise specified, longitudinal measurements for area computations will be made horizontally and no deductions will be made for individual fixtures having an area of nine square feet (one square meter) or less. Unless otherwise specified, transverse measurements for area computations will be the neat dimensions shown on the Plans or ordered in writing by the Engineer.

Structures will be measured according to neat lines shown on the Plans or as altered to fit field conditions.

All items which are measured by the linear foot (meter), such as pipe culverts, guardrail, underdrains, etc., will be measured parallel to the base or foundations upon which such structures are placed.

The term "gage" when used in connection with the measurements of plates, will mean the U.S. Standard Gage.

The galvanized sheet thicknesses to be used in the manufacture of metal cribbing, corrugated steel culvert pipe, underdrain pipe, plate pipe, pipe arches, plate pipe arches and plate arches shall be as specified in AASHTO M 36 or AASHTO M 167. The sheet thicknesses to be used in the manufacture of corrugated aluminum alloy culvert pipe, underdrain pipe, plate pipe, pipe arches, plate pipe arches and plate arches shall be as specified in AASHTO M 196 or AASHTO M 219.

The "size number" used in the measurement of wire will be as specified in AASHTO M 32 or AASHTO M 225.

The term ton will mean the short ton consisting of 2,000 lb. (The term megagram is defined as a mass of 1,000 kg). All materials which are measured or proportioned by weight shall be weighed on approved scales by competent, qualified personnel. Scales for weighing shall be of either the beam type, springless-dial type or digital recorder type. All plant and truck scales and metering devices shall be inspected, approved and sealed in accordance with the requirements of the West Virginia Division of Labor, Bureau of Weights and Measures, or other appropriate agencies of the State or its political subdivisions. Poles shall be designed to be locked in any position to prevent unauthorized changes. When the beam type scales are used, provisions for a "telltale" dial shall be made for indicating to the operator that the required load in the weighing hopper is being approached. A device on the weighing beams shall clearly indicate the critical position.

Truck scales shall be provided by the producer or Contractor, except that truck scales are not required where the material is weighed at properly calibrated automatic batching plant facilities which are equipped with digital print-out equipment or electronic ticket delivery (e-ticket) capabilities. The scales shall be of sufficient size and capacity to weigh the heaviest loaded trucks that are used for delivery of the material. All truck scales shall be mounted on solid foundations which will ensure their remaining plumb and level.

A weigh person shall be provided by the producer. The weigh person shall certify that the weight of the material, as determined either by the truck scales or from the digital print-out of the weights, is correct. To signify the certification of weight the weigh person must either sign their full name on each ticket, or if the ticket printer prints the weigh person's full name they must at least initial each ticket. In instance where an e-ticket is provided as documentation on the project; a digital signature of the weigh person on the e-ticket will be considered equivalent as hand-signed/initialed, printed ticket.

Each truck shall be weighed empty prior to each load, except at automatic batch plants approved to operate without truck scales. A digital recorder shall be required on all truck scales. The digital recorder shall produce a ~~printed~~ record of the gross, tare and net weights, and the time, date, truck identification and project number. Provision shall be made for constant zero compensation and further provision shall be made so that the scales may not be manually manipulated during the ~~printing-recording~~ process. The system shall be interlocked so as to allow printing-recording of results only when the scale has come to rest.

In case of a breakdown of the automatic equipment, the Engineer may permit manual operation for a reasonable time, normally not to exceed 48 hours, while the equipment is being repaired.

If material is shipped by rail, the car weight may be accepted provided the actual weight of material only will be paid for. However, car weights will not be acceptable for material to be passed through mixing plants.

Devices, used to meter or measure component or other materials in a simultaneous manner, shall be located so as to be readily accessible and visible to a single Inspector, unless otherwise directed by the Engineer.

Materials to be measured by volume in the hauling vehicle shall be hauled in approved vehicles and measured at the point of delivery. Vehicles for this purpose may be of any size or type acceptable to the Engineer, provided that the body is of such shape that the actual contents

may be readily and accurately determined. All vehicles shall be loaded to at least their water level capacity, and all loads shall be leveled when the vehicles arrive at the point of delivery.

When approved by the Engineer, material specified to be measured by the cubic yard (meter) may be weighed and these weights converted to cubic yard (meter) for payment purposes. Further, when it is impractical to measure the material by weighing, or in its original position, the material will be measured in its final position and adjusted by a volume change factor. These conversion factors will be determined by the Engineer and shall be agreed to by the Contractor before these methods of measurement are used.

When bituminous-asphalt material is measured by volume, the measured volume at loading temperature shall be converted to volume at 60° F (15° C) using the temperature correction factors in 705 for asphaltic materials and 706 for tar materials, except that when volume is measured by an approved temperature compensated metering device, no further volume correction for temperature shall be required. When bituminous-asphalt material is measured by weight, the actual specific gravity, API gravity, or weight per gallon (liter) of the material shall be used to convert the measured weight to volume at 60° F (15° C). The Contractor shall furnish all information necessary as determined solely by the Division to determine the amount of bituminous-asphalt material actually incorporated into the project.

Net certified scale weights or weights based on certified volumes in the case of rail shipments will be used as a basis of measurement, subject to correction when bituminous-asphalt material has been lost from the car or the distributor, wasted, or otherwise not incorporated in the work.

When bituminous-asphalt materials are shipped by truck or transport, net certified weights or volume, subject to correction for loss or foaming may be used for computing quantities.

Cement will be measured by the cement in hundredweight (cwt) (hundredweight = 100 lb.) (kilogram). For the purpose of determining the total amount used in the mixture, one bag of cement shall be considered as weighing 0.94 cwt (42.64 kg), and one barrel of cement shall be considered as weighing 3.76 cwt (175.55 kg).

Timber will be measured by the thousand feet board measure (mfbm) (cubic meters) actually incorporated in the structure, unless otherwise noted on the plans. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.

The term "lump sum" when used as an item of payment will mean complete payment for the work described in the Contract.

When a complete structure or structural unit (in effect, "lump sum" work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by gage, unit weight, section dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.

109.20-LOAD LIMIT VIOLATIONS AND WEIGH TICKETS:

DELETE THE CONTENTS OF THE SUBSECTION AND REPLACE WITH THE FOLLOWING:

The Allowable Gross Weight for any vehicle being used to haul materials on publicly maintained highways under the terms of this contract shall be as follows.

Title 23 Code of Federal Regulations, Section 658.17, establishes maximum allowable gross weight on the Interstate System. The maximum allowable gross weight on WV and US Routes will be as established in Chapter 17C, Articles 17 and 17A of the Official Code of West Virginia, as amended. The Public Service Commission, Weight Enforcement Section is responsible for the enforcement of these provisions.

A weigh ticket shall be required with each load of material from a commercial source which would normally have truck scales. This includes, but is not limited to, all asphalt paving materials and all aggregates regardless of the contract pay unit. The weigh ticket shall include gross, tare, and net weights, time and date of loading, Item Number or Description of Materials, Contract Number or Project Number, number of axles on haul unit, license number of haul unit, and signature of the weigher certifying that all information on the ticket is correct. If the weigher's name is printed by the computer on the ticket, then it only needs to be initialed by the weigher.

The Department will accept electronic ticket delivery (e-ticket) as documentation on projects provided that the standard information currently provided on the paper ticket is included on the e-ticket. The e-ticketing system must provide WVDOH field personnel the ability to access tickets from a smartphone, tablet, or laptop and to make notes associated with each ticket if needed. The service must also provide a daily summary report. A digital signature of the weigh person on an e-ticket or daily summary report shall be considered the equivalent as a hand-signed/initialed, printed ticket.

For material from a commercial source or a batch plant, which would not normally have truck scales, a weigh ticket documenting the tare weight, number of axles on the haul unit, license number of haul unit, date weighed, location of scales, and signature of the weigher certifying that all information on the ticket is correct, may be supplied for each haul unit as an alternate to the ticket required in the previous paragraph. The tare weight ticket shall be supplied for each contract on a yearly basis and when modifications are made to the vehicle or combination of vehicles. The weight of the material delivered shall be calculated and furnished by the vendor/supplier shipping the material to the project site or DOH facility. This includes, but is not limited to, concrete, structural steel, piling, reinforcing steel and all prepackaged material of known weight, such as cement, grout, fertilizer, lime, abrasives, etc.

If the haul unit is a combination of vehicles, the license number shall be supplied for each component. The tare weight shall be for the complete haul unit.

All weighing shall be done on scales approved and sealed by the West Virginia Division of Labor, Bureau of Weights and Measures. If the scales are moved or upon the request of the Engineer, the scales shall be reapproved and sealed. The Engineer shall be notified of any scale malfunctions. The Division of Highways may, at its option, accept inspection and sealing by out of state agencies when the material is being loaded outside West Virginia.

Any material, covered by this provision, which is delivered without the proper weigh ticket shall not be accepted by the Division of Highways.

Nothing in this provision relieves any party from compliance with the State Law on load limits or any fines which may be assessed for violation of said law.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 107

LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

107.21-PROTECTION OF RIVERS, STREAMS, AND IMPOUNDMENTS:

107.21.1-Erosion and Sedimentation Control:

DELETE THE THIRD PARAGRAPH OF THE SUBSECTION AND REPLACE WITH THE FOLLOWING:

Any details not shown in the plans shall be in accordance with the latest version of the ~~West Virginia Division of Highways Erosion and Sediment Control Manual~~ West Virginia Department of Environmental Protection, Erosion and Sediment Control Best Management Practices Manual. In the event that temporary erosion and sediment control measures are necessary due to the Contractors negligence, carelessness or failure to install permanent controls as part of the work as scheduled, such work shall be performed by the Contractor at his own expense.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 207

EXCAVATION AND EMBANKMENT

207.6-DISPOSAL OF MATERIAL:

207.6.3-Waste:

207.6.3.1-Waste Within WVDOH Right-Of-Way Limits:

DELETE THE FORTH PARAGRAPH OF THE SUBSECTION AND REPLACE WITH THE FOLLOWING:

Upon receipt of the Contractor's complete waste site submission, the Engineer shall follow the guidelines as set forth in the latest edition of the ~~Erosion and Sediment Control Manual~~ WVDEP Erosion and Sediment Control Best Management Practices Manual for review and acceptance by the Division. The Contractor may be required to revise the site plan prior to acceptance by the Division. The Contractor's waste site plan must be approved as per section 105.2.1.2 and the West Virginia Department of Environmental Protection before any waste material can be placed in the site.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

**SECTION 211
BORROW EXCAVATION**

211.3-GENERAL:

211.3.1-Borrow within WVDOH R/W Limits:

DELETE THE THIRD PARAGRAPH OF THE SUBSECTION AND REPLACE WITH THE FOLLOWING:

Upon receipt of the Contractor's complete borrow site submission, the Engineer shall follow the guidelines as set forth in the latest edition of the ~~Erosion and Sediment Control Manual~~ WVDEP Erosion and Sediment Control Best Management Practices Manual for review and acceptance by the Division. The Contractor may be required to revise the site plan prior to acceptance by the Division. The Contractor's borrow site plan must be approved as per section 105.2.1.2 and the West Virginia Department of Environmental Protection before any borrow material can be obtained from the site.

211.3.3-Impervious Core:

DELETE THE SECOND PARAGRAPH OF THE SUBSECTION AND REPLACE WITH THE FOLLOWING:

The impervious core shall have a minimum dimensions as set forth in ~~Item 5, par. 20.3.4.3.1 Erosion and Sediment Control Manual, West Virginia Division of Highways~~ WVDEP Erosion and Sediment Control Best Management Practices Manual, latest edition.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SPECIAL PROVISION

FOR

STATE PROJECT NUMBER: _____

FEDERAL PROJECT NUMBER: _____

**SECTION 212
STRUCTURE, ROCK, AND WET EXCAVATION**

ADD THE FOLLOWING SUBSECTIONS TO THE SECTION:

212.1-DESCRIPTION:

212.1.1-Shoring: This work consists of providing shoring to contain causeway material at specific areas designated in the Contract and any temporary bridge structures needed to maintain flow of water around causeway structures.

212.3-GENERAL:

212.3.1-Shoring: Materials and Construction Requirements: The Contractor shall locate, size, design and construct shoring which provides all necessary rigidity, and supports the loads imposed to facilitate construction as shown on the plans. The areas shown on plan are representative of what may be constructed under the U.S. Army Corps of Engineers 404 Permit. The contractor may reduce the causeway areas or use other means of Construction Access provided these means do not violate the 404 Permit requirements.

When the height of shoring exceeds 5' above the base of the excavation, shoring drawings shall be provided by the Contractor to the Engineer for information only. The drawings shall be prepared, signed and sealed by the Contractor's Engineer. These drawings shall be approved and signed by the Contractor and provided to the Engineer at least 10 days prior to start of work.

Temporary bridge drawings shall be provided by the Contractor to the Engineer for information only. The drawings shall be prepared, signed and sealed by the Contractor's Engineer. These drawings shall be approved and signed by the Contractor and provided to the Engineer at least 10 days prior to start of work. October 19, 2012

Shoring and temporary bridges shall be constructed in conformity with the shoring and bridge drawings provided to the Engineer. Prior to placing construction or traffic loads on the supported earth and bridges, the Contractor's Engineer shall certify in writing that shoring and

bridge materials and construction have been inspected and that all shoring, bridge, materials and construction are in conformity with the drawings. A copy of this certification shall be submitted in an appropriate form for the Engineer's records.

If the embankment, construction, traffic or any other surcharge is in excess of what the original shoring or bridges were designed for, the Contractor shall provide a signed letter from the Contractor's Engineer prior to the load placement stating that the shoring and/or bridges will support the additional load.

Shoring and bridge drawings shall include the following information as applicable:

1. The size and grade of all structural materials.
2. Design notes, including design assumptions and construction details.
3. Where applicable, restrictions on heavy equipment placement at specific locations adjacent to the shoring.
4. Areas determined by the Contractor's Engineer where de-watering of the shored excavation will be required, and a description of the requirements (i.e., head added by the pump, flow rate, minimum pump size, etc.) and methods to be used for de-watering.
5. All other information determined by the Contractor's Engineer to be pertinent to the design and successful construction of the shoring and/or bridges.

212.11-METHOD OF MEASUREMENT:

212.11.1-Shoring: Shoring and temporary bridge structures will not be measured, but will be paid for as a single lump sum for each area described on the plans.

212.12-BASIS OF PAYMENT:

212.12.1-Shoring: Payment for shoring, causeway will be full compensation for all labor, materials equipment required to design, construct and remove the shoring and temporary bridges.

212.13-PAY ITEMS:

ADD THE FOLLOWING TO THE TABLE:

ITEM	DESCRIPTION	UNIT
212010-001	Shoring, Causeway	Lump Sum

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SPECIAL PROVISION

FOR

STATE PROJECT NUMBER: _____

FEDERAL PROJECT NUMBER: _____

**SECTION 403
CRACK SEALING IN ASPHALT PAVEMENT**

403.1-DESCRIPTION:

The work shall consist of the cleaning, crack sealing, and crack filling in asphalt pavement in the manner and subject to the conditions and regulations prescribed.

403.2-MATERIALS:

The material shall be hot poured crack sealant and conform to the requirements of Section 708.3 of the Specifications. As well as being compatible with asphalt pavement recycling.

403.3-WEATHER RESTRICTIONS:

The sealant material shall not be applied when the weather is foggy, rainy or when the ambient and pavement temperatures are below 40° F.

403.4-CONSTRUCTION:

403.4.1-Preparation of Material for Use: Before charging the compound into the melting unit, the unit shall be free from all foreign material. If the type of heater to be used requires that the sealing material, as shipped, be cut into smaller pieces before melting, the cutting method used is subject to the approval by the Engineer.

The heating kettle used for melting sealing materials shall be of the indirect heating or double boiler type, using oil as the heat transfer medium. It shall have a thermostatically controlled heat source, a built-in automatic agitator, and thermometers installed to indicate both the temperature of the melted sealing material and that of the oil bath. Other methods of indirect heating approved by the Engineer may be used. A positive means of controlling the temperature of the heat transfer at all points in the system shall be incorporated in the heater. Sealing material shall be uniformly heated until the pouring temperature recommended by the manufacturer is reached. Should the maximum pouring temperature recommended be exceeded, the material will be rejected. The material shall be poured as soon as possible after the pouring temperature is reached. Only sufficient material for the day's operation shall be heated each day.

403.4.2-Preparation of Joints and Cracks for Sealing: The cracks shall be thoroughly cleaned of all loose scale, dirt, dust, vegetation, or other foreign matter prior to placing hot poured crack sealant. This ~~may shall~~ be accomplished by use of ~~compressed air, hand tools, power tools such as rotary brushes, or by any method or combination of methods~~ a hot air lance, and any other tools necessary to complete the work. The use of any tool which results in damage to the pavement is prohibited. ~~Oil/water separator shall be used on all air compressor equipment when cleaning the crack.~~

403.4.3-Equipment for Applying Sealer: The equipment used shall conform to the manufacturers recommendations and consist of heating units from which material may be discharged into the crack through the use of flexible lines and suitable shoes.

403.4.4-Placement Requirements: Any spillage of sealing material on pavements shall be immediately removed. A neat and workmanlike job will be required at all times. At no time shall sealing material be placed in a crack which either dirty or wet. The crack shall be clean and surface dry at the time of placement. Work will be suspended when cracks are wet or damp and when the atmospheric temperature is below ~~the minimum specified by the manufacturer~~ 40 degrees. The standard overband shall be 3" centered over the crack. After the sealant has cooled, settling shall not exceed 3/8" below the surface. Any damage to uncured sealant shall be repaired at the contractor's expense. Cracks wider than 1" and deeper than 3" shouldn't be sealed to avoid improper sealing. If no overlay work is being performed then no more than 25% of the surface area is to be crack sealed, due to danger of diminished skid resistance.

403.4.5-Equipment, Personnel, and Documentation Requirements: The Contractor (two (2) days prior to commencement of the project) shall submit to the Engineer a detailed list of all equipment to be used for crack sealing on the project. The Contractor shall also provide certification from the Sealing material manufacturer that the Contractor is qualified to apply the manufacturer's material in conformance with these specifications and the manufacture's recommendations.

The Contractor is responsible for quality control, and shall submit a quality control plan in accordance with these specifications to the Engineer at the Pre-Construction Conference.

403.5-METHOD OF MEASUREMENT:

The quantity of work done will be measured in linear feet of "Crack Sealing in Asphalt Pavement" applied and accepted. ~~Measurement is to be conducted after cleaning and prior to the placement of the sealant.~~

403.6-BASIS OF PAYMENT:

The quantity of work, as determined above, will be paid for at the contract unit price bid for the item below, which price and payment shall be full compensation for furnishing all materials, and doing all the work prescribed in a workmanlike and acceptable manner, including all the labor, tools, equipment, supplies and incidental necessary to complete the work.

403.7-PAY ITEM:

ITEM	DESCRIPTION	UNIT
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403001-001	Crack Sealing in Asphalt Pavement	Linear Foot
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July 28, 2020

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
SUPPLEMENTAL SPECIFICATION
FOR
SECTION 504
BITUMINOUS UNDERSEAL FOR CONCRETE PAVEMENT

DELETE THE ENTIRE SECTION

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION**DIVISION OF HIGHWAYS****SPECIAL PROVISION****FOR****STATE PROJECT NUMBER:** _____**FEDERAL PROJECT NUMBER:** _____**SECTION 504****BITUMINOUS ASPHALT UNDERSEAL FOR CONCRETE PAVEMENT****504.1-DESCRIPTION:**

This work shall consist of drilling holes in Portland cement concrete pavement at the locations shown on the Plans or where directed by the Engineer, pumping ~~bituminous-asphalt~~ material through the holes, and sealing the holes with cement grout.

504.2-MATERIALS:

The materials shall meet the requirements specified in the following Subsections of Division 700:

MATERIAL	SUBSECTION
Asphalt Cement	705.6
Fine Aggregate*	702.1
Portland Cement	701.1 & 701.3
Water	715.7

* The use of limestone sand will not be permitted.

Grout for sealing holes shall consist of one part Portland cement and three parts fine aggregate, mixed to the consistency directed by the Engineer.

CONSTRUCTION METHODS**504.3-GENERAL:**

Holes of 1-1/2 in. (40 mm) diameter shall be drilled through the concrete pavement at the locations shown on the Plans or as directed by the Engineer. ~~Bituminous-Asphalt~~ material shall then be pumped through the holes and under the pavement by means of an approved type of pump.

Equipment for pumping shall be capable of developing a pressure of 80 lb. per sq. in. (550 kPa), the exact working pressure to be determined by the Engineer.

Prior to pumping, the surface of the concrete pavement around the previously drilled holes shall be thoroughly sprinkled with water or shall be covered with sand, earth or other suitable material in order to prevent any bitumen that may be spilled on the pavement from adhering to the surface. The nozzle shall then be inserted in the hole, driven to a snug fit, and pumping operations begun. ~~Bituminous Asphalt~~ material shall be pumped through the holes and under the pavement until the voids under the pavement are completely filled, or the concrete pavement has been raised to the grade of existing adjacent pavement or to such grade as directed by the Engineer. At the first indication of an undesirable movement of the slab or a blowout, pumping shall immediately be discontinued. The connecting device placed in the drilled hole shall not be removed from the hole until the bitumen has cooled sufficiently to prevent backflow. At the time the ~~bituminous asphalt~~ material is pumped under the pavement, it shall have a temperature of not less than 400° F (205° C). The Contractor shall provide all necessary facilities for determining the temperature of the ~~bituminous asphalt~~ material in all heating equipment and distributors.

After completion of the pumping in each hole, all ~~bituminous asphalt~~ material shall be cleaned from the pavement surface and the drilled hole shall be filled with grout to an elevation flush with the pavement surface.

After the completion of subsealing operations, the pavement surface shall be left in a clean and neat condition satisfactory to the Engineer.

The ~~bituminous asphalt~~ material shall not be applied on a frozen subgrade, nor when the atmospheric temperature is below 40° F (5° C) and is falling, with the further provision that it shall be placed only when general weather conditions, in the opinion of the Engineer, are suitable.

504.4-METHOD OF MEASUREMENT:

The quantity of work done will be measured in gallons (liters) of "~~Bituminous Asphalt~~ Underseal Material" and in "Drilling Holes in Concrete Pavement" determined as follows: The quantity of "~~Bituminous Asphalt~~ Underseal Material" shall be the number of gallons (liters) incorporated in the completed and accepted work, which volume will be measured as prescribed in 109.1. The quantity of "Drilling Holes in Concrete Pavement" shall be the actual counted number of holes drilled and satisfactorily filled.

504.5-BASIS OF PAYMENT:

The quantities, determined as provided above, will be paid for at the contract unit prices bid for the items listed below, which prices and payments shall be full compensation for furnishing all the materials, including grout, and doing all the work prescribed in a workmanlike and acceptable manner, including all labor, tools, equipment, supplies and incidentals necessary to complete the work.

504.6-PAY ITEMS:

ITEM	DESCRIPTION	UNIT
504001-*	Bituminous Asphalt Underseal Material	Gallon (Liter)
504002-*	Drilling Holes In Concrete Pavement	Each

* Sequence number

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

**SECTION 601
STRUCTURAL CONCRETE**

601.3-PROPORTIONING:

601.3.2-Field Tolerances and Adjustments:

601.3.2.3-Yield:

ADD THE FOLLOWING SENTENCE TO THE END OF THE THIRD PARAGRAPH

The Division shall perform Yield tests randomly throughout the progress of work to verify the accuracy of the Contractor's tests.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 603

PRESTRESSED CONCRETE MEMBERS

603.2-MATERIALS:

603.2.1-Inspection and Testing:

DELETE THE CONTENTS AND REPLACE WITH THE FOLLOWING:

A representative of the Engineer shall have free entry at all times, while the work on the Contract is being performed, to all parts of the manufacturer's works which concern the manufacture of the materials ordered. The manufacturer shall afford the representative of the Engineer, without charge, all reasonable facilities to satisfy themselves that the material is being furnished in accordance with these specifications. Inspection and acceptance procedures for prestressed concrete bridge members shall be in accordance with MP 603.10.40.

The Fabricator's QC Personnel, as a minimum, shall be a certified ACI Grade I Concrete Field Testing Technician and/or a WVDOH PCC Inspector. In addition, if Self-Consolidating Concrete (SCC) is used, Fabrication Plant QC Personnel shall be a certified ACI SCC Testing Technician.

603.6-CONCRETE:

603.6.2-Mix Design:

603.6.2.1-Class S-P Concrete Mix Design Testing:

DELETE THE FIRST PARAGRAPH AND REPLACE WITH THE FOLLOWING:

To ensure repeatability of production, two batches of concrete with the same mix proportions shall be created for mix qualification testing. The results of this testing shall be submitted to the Division for approval at least 45 days prior to the use of the mix in construction. Personnel performing testing on Class S-P concrete shall be certified by ACI as a Self-Consolidating Concrete Testing Technician.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION**DIVISION OF HIGHWAYS****SUPPLEMENTAL SPECIFICATION****FOR****SECTION 606
UNDERDRAINS****606.2-MATERIALS:**

ADD THE FOLLOWING TO THE TABLE:

MATERIAL	SUBSECTION	TYPE OR GRADATION
<u>Outlet Pipe</u>	<u>715.10.1.5</u>	

606.2.3-Free Draining Base Trench Materials:

DELETE THE CONTENTS OF THE SUBSECTION AND REPLACE WITH THE FOLLOWING:

The perforated pipe and outlet pipe as detailed on the plans shall meet the requirements of this Section. ~~The Outlet pipe as detailed on the plans shall meet the requirements of Subsection 715.10.1.5.~~

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SPECIAL PROVISION

FOR

STATE PROJECT NUMBER: _____

FEDERAL PROJECT NUMBER: _____

**SECTION 615
STEEL STRUCTURES**

615.1-GENERAL:

615.1.1-Description:

ADD THE FOLLOWING:

Jacking Steel Superstructure. This work shall consist of the design and implementation of the jacking of steel superstructure to complete repairs as described in the plans. Jacking of steel superstructure shall include access, jacks, structural members, connections, rollers and other supports as needed to jack the superstructure and adequately support the anticipated loads during construction, including, but not limited to, dead loads, wind loads, and construction loads.

Temporary Falsework. This work shall consist of the design, installation, and removal of temporary falsework to support the bridge while completing repairs as described in the plans. Temporary falsework shall include foundations, structural members, connections, bracing, and other supports as needed to adequately support the anticipated loads during construction, including, but not limited to, dead loads, wind loads, and construction loads.

Shoring, Causeway. This work shall consist of construction of the causeway that is required for the shoring towers if they are placed outside the causeway limits as described in the plans. This work shall also include all necessary work required to maintain and remove the causeway and to restore the area to its original condition and obtaining all permits necessary for constructing the causeway.

615.1.2-Notice of Beginning Work:

ADD THE FOLLOWING:

615.1.2.1-Submittals: Submittals shall be accepted by the Engineer prior to commencement of the subject work.

ADD THE FOLLOWING SUBSECTION:

615.1.5-Alternate Technical Concepts (ATCs): ATCs eligible for consideration shall be limited to those deviations from the requirements of the plans that result in performance and quality of the end product that is equal to or better than the performance and quality of the end product absent the deviation, as determined by WVDOH in its sole discretion. A concept is not an ATC if, in WVDOH's sole judgment, it merely results in reduced quantities, performance or reliability. A concept is not eligible for consideration as an ATC if it is premised upon or would require an increase in the amount of time required for the work to be completed. ATCs that, if implemented, would require further environmental evaluation may be allowed, provided that the Contractor will bear the schedule and cost risk associated with such additional environmental evaluation. If the Contractor is not able to obtain the approvals necessary to implement the ATC, the Contractor will be obligated to complete the work in accordance with existing approvals without additional cost or extension of time.

If a Contractor is unsure whether a concept is consistent with the requirements of the contract or if that concept would be considered an ATC by WVDOH, WVDOH recommends that the Contractor submit such concept for review as an ATC.

615.1.5.1-Design Requirements: The ATC shall conform to the following design conditions and/or requirements:

- (a) temporary towers and works shall have the ability to roll-in and roll-out of the bridge or support the bridge in-place;
- (b) hydraulic analysis of the flood area shall be evaluated with all temporary towers and works in place; a hydrologic and hydraulic report shall be signed and sealed by a West Virginia Registered Professional Engineer;
- (c) geometry of the bridge shall be verified by survey and submitted to the Engineer;
- (d) calculations shall be signed and sealed by a West Virginia Registered Professional Engineer;

615.1.5.2-Bidding: The Contractor is only allowed to bid an ATC if approved to do so in advance of the letting date by the WVDOH. Bids will be rejected if an ATC is bid without approval.

615.1.5.3-Submission: The Contractor may submit ATCs for review to WVDOH Project Manager: (Name) until the date and time identified. All ATCs shall be submitted in writing, with a cover sheet identifying the Contractor and stating "Capon Bridge – Confidential ATCs." The Contractor shall clearly identify the submittal as a request for review of an ATC. If the Contractor does not clearly designate its submittal as an ATC, the

submission will not be treated as an ATC by WVDOT. ATC submittals shall include an electronic copy of a narrative description of the ATC and technical information, including drawings, as described below:

- (a) a sequential ATC number identifying the Contractor and the ATC number (multi-part or multi-option ATCs shall be submitted as separate individual ATCs with unique sequential numbers);
- (b) a description and conceptual drawings of the configuration of the ATC or other appropriate descriptive information;
- (c) the locations where, and an explanation of how, the ATC will be used;
- (d) any changes in operations requirements associated with the ATC, including ease of operations;
- (e) any changes in maintenance requirements associated with the ATC, including ease of maintenance;
- (f) any reduction in the time period necessary to design and perform the construction operations resulting from implementing the ATC, including, as appropriate, a description of method and commitments;
- (g) references to requirements of the contract documents which are inconsistent with the proposed ATC, an explanation of the nature of the deviations from said requirements, and a request for approval of such deviations;
- (h) the analysis justifying use of the ATC and why the deviation, if any, from the requirements of the contract documents should be allowed;
- (i) a preliminary analysis of potential impacts on vehicular traffic (both during and after construction), environmental permitting, community impact, safety, and lifecycle costs, including impacts on the cost of repair, maintenance and operation;
- (j) if and what additional right-of-way will be required to implement the ATC; Contractors are advised that they shall:
 - i. be solely responsible for the acquisition of any such right-of-way, including the cost thereof and obtaining any necessary Environmental Approvals;
 - ii. not be entitled to any additional time or money as a result of Site conditions (i.e., Hazardous Materials, differing site conditions, geotechnical issues, Utilities, etc.) on such additional right-of-way; and
 - iii. not be entitled to any additional time or money as a result of any delay, inability or cost associated with the acquisition of such right of way);
- (k) a description of other projects where the ATC has been used, the degree of success or failure of such usage and names and contact information including phone numbers and e-mail addresses for project owner representatives that can confirm such statements;
- (l) a description of added risks to WVDOT or third parties associated with implementing the ATC;
- (m) an estimate of any additional WVDOT, Contractor and third party costs associated with implementation of the ATC;
- (n) an estimate of any savings that would accrue to WVDOT should the ATC be approved and implemented; and
- (o) a description of how the ATC is equal or better in quality and performance than the requirements of the contract documents;

If implementation of an ATC will require approval by a third party (e.g., a governmental authority), the Contractor will have full responsibility for, and bear the full risk of, obtaining any such approvals. If any required third-party approval is not subsequently granted with the result that the Contractor must comply with the requirements of the contract documents, the Contractor will not be entitled to any additional time or money.

615.1.5.4-Review: WVDOH may request additional information regarding proposed ATCs at any time and will, in each case, return responses to each Contractor regarding its ATC on or **before the date and time identified**, provided that WVDOH has received all requested information regarding such ATC.

WVDOH's responses will be limited to one of the following statements:

- (a) the ATC is acceptable for inclusion in the bid;
- (b) the ATC is not acceptable for inclusion in the bid;
- (c) the ATC is not acceptable in its present form, but may be acceptable upon the satisfaction, in WVDOH's sole discretion, of certain identified conditions which must be met or clarifications or modifications that must be made; or
- (d) the submittal does not qualify as an ATC but may be included in the Contractor's bid without an ATC (i.e., the concept complies with the contract requirements).

WVDOH will make a preliminary determination on whether to accept and approve an ATC for submission. However, the Contractor will be responsible for ensuring that the final submittal complies with the contract requirements.

Approval of an ATC will constitute a change in the specific requirements of the contract documents associated with the approved ATC for that specific Contractor. Each Contractor, by submittal of its bid, acknowledges that the opportunity to submit ATCs was offered to all Contractors, and waives any right to object to WVDOH's determinations regarding acceptability of ATCs.

WVDOH's rejection of a pre-bid submission of an ATC will not entitle the Contractor to an extension of the bid Due Date or the date that the ATCs are due; provided, however, that the foregoing shall not limit WVDOH's absolute and sole right to modify the bid Due Date or any other date in connection with this procurement.

WVDOH anticipates that its comments provided to a Contractor will be sufficient to enable the Contractor to make any necessary changes to its ATCs. However, if a Contractor wishes additional clarifications regarding necessary changes, the Contractor may provide a written request for clarifications.

615.2-WORKING DRAWINGS:

615.2.2-Caber Diagram:

ADD THE FOLLOWING TO SECTION 615.2.2:

The Contractor shall conduct a pre- and post- surveys at each panel point to verify that the geometry has been maintained.

ADD THE FOLLOWING:

615.2.3-Temporary Falsework: The Contractor shall submit drawings illustrating fully their proposed method of temporary support. The drawings shall show details of all falsework bents, bracings, guys, dead-men, and attachments to the bridge; sequence of installation; installation procedures; capacities and weights. The drawings shall be complete in detail for all anticipated phases and conditions during erection. Design calculations, sealed by a West Virginia Registered Professional Engineer, shall be submitted by the Contractor to the Engineer twenty-one days prior to commencing work, unless otherwise noted in the plans. Receipt of plans, drawings and calculations does not constitute review or approval or relieve the Contractor of their responsibility to satisfactorily design the temporary falsework. The design calculations shall demonstrate that member capacities for falsework and supported members are not being exceeded.

615.2.4-Jacking Steel Superstructure: The Contractor shall submit drawings illustrating fully their proposed method of jacking the superstructure. The drawings shall show details of all jacks and product data; structural members, rollers, connections and other supports; sequence of jacking; and jacking procedures. The drawings shall be complete in detail for all anticipated phases and conditions during erection. Design calculations, sealed by a West Virginia Registered Professional Engineer, shall be submitted by the Contractor to the Engineer twenty-one days prior to commencing work, unless otherwise noted in the plans. Receipt of plans, drawings and calculations does not constitute review or approval or relieve the Contractor of their responsibility to satisfactorily design the jacking of the superstructure. The design calculations shall demonstrate that member capacities for jacking and supported members are not being exceeded.

615.2.5-Shoring, Causeway: The Contractor shall submit drawings illustrating fully their proposed method and limits of the causeway for the shoring towers if it beyond the limits as described in the plans. The drawings shall show details of the materials used; sequence of installation; installation procedures. The drawings shall be complete in detail for all anticipated phases and conditions during construction. Design calculations, sealed by a West Virginia Registered Professional Engineer, shall be submitted by the Contractor to the Engineer twenty-one days prior to commencing work, unless otherwise noted in the plans. Receipt of plans, drawings and calculations does not constitute review or approval or relieve the Contractor of their responsibility to satisfactorily design and construct the causeway.

615.6-ERECTION:**ADD THE FOLLOWING:**

615.6.10-Temporary Falsework: The Contractor's attention is directed to sections 615.6.1 and 615.6.8. If the Contractor chooses not to place temporary falsework or the temporary falsework does not successfully support the loads and/or the supported structure is damaged, the Contractor is responsible for all remedies to return the supported structure to the original condition, as directed by the Engineer.

615.8-BASIS OF PAYMENT:

ADD THE FOLLOWING:

615.8.1-Temporary Falsework: The Contractor will be paid 75% of the bid price for this item once all the falsework is in place. The remaining 25% will be paid once it is all removed.

615.8.2-Jacking Steel Superstructure: The Contractor will be paid 50% of the bid price for this item once the truss is moved out. The remaining 50% will be paid once all jacking operations are completed and equipment removed.

The quantities, determined as provided above, will be paid for at the contract unit prices bid for the items listed below, which prices and payments shall be full compensation for furnishing all the material and doing all the work herein prescribed in workmanlike and acceptable manner including all labor, tools, equipment, supplies, access, installation of web-stiffeners (if required), beveled plates, rollers, structural modifications (if required), and incidentals necessary to complete the work.

615.8.3-Shoring, Causeway: The Contractor will be paid 50% of the bid price for this item once the causeway is constructed. The remaining 50% will be paid once the causeway is removed and the area is restored to its original conditions.

615.9-PAY ITEMS:

ADD THE FOLLOWING:

ITEM	DESCRIPTION	UNIT
202010-001	Shoring, Causeway, per ATC	Lump Sum
615010-003	Temporary Falsework, per ATC	Lump Sum
615039-001	Jacking Steel Superstructure, per ATC	Lump Sum

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR SECTION 626 RETAINING WALL SYSTEMS

626.7-METHOD OF MEASUREMENT:

DELETE THE CONTENTS OF THE SUBSECTION AND REPLACE WITH THE FOLLOWING:

626.7.1-General: The unit of measurements shall be the ~~gross~~-area in square feet (meters) lying in a plane outside the front face of the structure as determined by the dimensions in the contract documents. The ~~gross~~-area is taken from the top of the leveling pad to the top of the wall and shall include coping but shall not include barriers, footings, or leveling pads. The ~~gross~~-area shall be ~~the number of square feet (square meters) measured,~~ subject to adjustment as provided in Sections 104.2 and 109.2 of the ~~Standard~~ Specifications. No adjustments of pay quantity shall be allowed for changes in wall design to facilitate the Contractor's methods of construction of wall type.

Unless otherwise specified in the contract documents, items such as concrete barriers that are not part of normal retaining wall construction shall be measured separately for payment.

The quantity of earthwork shown in the plans does not include any work within the wall pay limits shown in the plans. Any adjustments to the required amount of embankment or select granular backfill due to the particular wall system proposed by the contractor shall be considered incidental to the project. No separate payment shall be made for increased embankment or increased select granular backfill requirements. The Contractor shall be responsible for any of the cost of changes in waste, borrow, or earthwork quantities from those shown in the plans caused by the requirements of the proposed wall system.

626.7.2-Mechanically Stabilized Earth: The unit price shall include in place: facing elements, soil reinforcing and attachment devices and associated hardware, coping and trim, or similar items that are normal parts of wall construction. No separate ~~measurement payment~~ of these items shall be made.

The unit price shall also include, in place, all the following items shown within the wall pay limits in the plans: select granular backfill, fabric for separation, excavation, embankment, foundation preparation, and leveling pads. No separate ~~measurement payment~~ of these items shall be made.

626.7.3-Cast-in-Place Reinforced Concrete: The unit price shall include in place: concrete, reinforcing, joint materials, underdrains, weepholes, or similar items that are normal parts of wall construction. No separate ~~measurement-payment~~ of these items shall be made.

The unit price shall also include in place: all the following items shown within the wall pay limits in the plans: select material for backfilling, excavation, embankment, fabric for separation, and foundation preparation. No separate ~~measurement-payment~~ of these items shall be made.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

**SECTION 636
MAINTAINING TRAFFIC**

636.6-PILOT TRUCK AND DRIVER OR SHADOW VEHICLE

636.6.2-Shadow Vehicle:

DELETE THE CONTENTS OF THE SUBSECTION AND REPLACE THE FOLLOWING:

A shadow vehicle shall be furnished by the Contractor and used at the locations called for on the Plans or directed by the Engineer. ~~This vehicle shall be a standard truck weighing between 10,000 GVW (4 536 kg) and 24,000 GVW (10 880 kg) maximum, and shall be A~~ Shadow Vehicle shall consist of a commercial host vehicle equipped with a flashing or rotary yellow beacon which can be seen in all directions and a truck mounted attenuator (TMA) or Trailer Truck Mounted Attenuator (TTMA) mounted on the rear. When the shadow vehicle is no longer needed, it shall be relocated behind a positive barrier or off the job site in a safe location.

Except as allowed for herein, TMA's and TTMA's utilized shall be listed on the Division Approved Products List (APL) for Impact Attenuators – MASH and shall meet the applicable requirements contained in Section 715.41.

The Contractor shall utilize the TMA or TTMA in accordance with the manufacturer's recommendations, shall be responsible for selecting an appropriate host vehicle configured in accordance with and meeting the manufacturer's recommendations, and shall be responsible for taking into consideration all factors such as expected post-impact roll ahead distance for their specific operation at each differing location. In all cases, the Gross Vehicle Weight (GVW) of the host vehicle shall be within the range specified on the APL. This range is based on the parameters of the host vehicle weight(s) utilized during the MASH testing of the device.

For projects let on or prior to December 31, 2022, TMA's and TTMA's not listed on the Impact Attenuators – MASH APL but listed on the Impact Attenuators – NCHRP APL and manufactured on or prior to December 31, 2019 may be utilized.

Test Level 2 devices listed on either the MASH or NCHRP APL's may only be utilized on roadways with a normal posted speed limit of forty (40) MPH or less.

636.12-TEMPORARY IMPACT ATTENUATING DEVICE:

DELETE THE 2ND, 3RD, AND 4TH PARAGRAPHS OF THE SUBSECTION AND REPLACE WITH THE FOLLOWING:

~~The device utilized shall be a model listed on the WVDOT Approved Products Listing (APL) for Safety Devices specifically noted as being approved for temporary work zone use. Specific device selection in regards to manufacturer and model shall be at the Contractor's discretion; however, unless the characteristics of the obstacle to be shielded dictate otherwise, the device utilized shall be a non-tapered, non-gating device. If it is not possible, based on the width of the obstacle to be shielded, to utilize a non-tapered, non-gating device, the Contractor shall utilize an approved Sand Barrel system.~~

~~Notes included on the APL characterize non-gating devices by their National Cooperative Highway Research Program Report 350 (NCHRP 350) crash testing approval level (Test Level 2 or Test Level 3). The Test Level certification required for each particular device to be qualified at shall be based on the normal (non-work zone) posted speed limit in effect at the location of the device. A Test Level 2 or Test Level 3 device shall be utilized if the normal posted speed limit is 40 MPH or less. Otherwise, a Test Level 3 device shall be required. Sand Barrel arrays shall be designed for an impact speed 5 MPH greater than the normal posted speed limit.~~

~~Except as allowed for herein, devices utilized shall be listed in the applicable Class category on the Agency Impact Attenuators – MASH Approved Products List (APL). The type of Impact Attenuator utilized shall be a Test Level 2 or 3, Class 1 or 3 Impact Attenuator as defined in and meeting the requirements of Section 715.41, and as specified in the Plans. If space permits, a Test Level 3 device may be utilized where a Test Level 2 device is specified. Test Level 2 devices shall not be utilized on roadways with normal posted speed limits greater than forty (40) MPH. Only Class 1 devices noted on the APL as being approved for temporary work zone use may be used. All approved Class 3 devices are for temporary or emergency use only. In cases where a Class 3 device is specified, the array shall be properly designed for the obstacle to be shielded and shall be winterized in accordance with the manufacturer recommendations. Class 3 device arrays shall be designed for a minimum of forty-five (45) MPH for Test Level 2 and a minimum of sixty-five (65) MPH for Test Level 3.~~

~~For projects let on or prior to December 31, 2021, devices not listed on the Impact Attenuators – MASH APL but listed on the Impact Attenuators – NCHRP APL and manufactured on or prior to December 31, 2018, may be utilized. Appropriate Test Level Type II, III, VIII, or IX devices on the NCHRP APL noted as being approved for temporary work zone use may be utilized as a Class 1 device. Type V devices on the NCHRP APL appropriately designed for the specified Test Level may be utilized as a Class 3 device.~~

All Temporary Impact Attenuating Devices shall be installed and maintained fully in accordance with the specifications and recommendations of the device manufacturer. This shall include, but shall not be limited to, ~~characteristics of the roadway profile along the approach to the nose of the device and along the adjacent (traffic) side of the device, changes in the roadway grade within the length of the device, side slope and changes in the side slope at the location of the device, lateral slope and changes to lateral slope within the length of the device,~~ anchoring (base to be anchored to as well as the anchoring system), backup, attachment to the obstacle being shielded, transitioning to the obstacle being shielded, winterization, delineation, repair, and cleaning. ~~If the installation requires deviations from the specifications and recommendations of~~

~~the device manufacturer, the Contractor shall obtain written approval from the device manufacturer and shall produce this written approval for review upon request.~~

636.25-PAY ITEMS:

REPLACE 636060 "TEMPORARY IMPACT ATTENUATING DEVICE" WITH THE FOLLOWING AND ADD NOTE 2 AS FOLLOWS:

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
<u>636060-*</u>	<u>Temporary Impact Attenuating Device, C-"Class Number", TL-"MASH Test Level" Note 2</u>	<u>Each</u>

Note 2

"Class Number" shall be 1 or 3

"MASH Test Level" shall be 2 or 3

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATIONS

FOR

**SECTION 642
TEMPORARY POLLUTION**

642.1-DESCRIPTION:

DELETE THE FIRST PARAGRAPH AND REPLACE THE FOLLOWING.

This work shall consist of temporary control measures performed during the life of the Contract to control water pollution through use of berms, ~~ditch checks~~ rock check dam, ~~check dams~~, sediment structures (traps, ponds, or dams), mulches, fiber mats, seeding slope drains, and other erosion control devices or construction methods, in accordance with these Specifications and in reasonably close conformity with the lines, grades, thickness and typical cross sections shown on the Plans or established by the Engineer.

642.4-GENERAL REQUIREMENTS:

DELETE THE FIRST PARAGRAPH AND REPLACE THE FOLLOWING.

The Engineer has the authority to limit the surface area of erodible earth material exposed by clearing and grubbing, to limit the surface area of erodible earth material exposed by excavation, borrow and fill operations and to direct the Contractor to provide immediate permanent or temporary pollution control measures as necessary to prevent contamination of adjacent streams or other watercourses, lakes, ponds, or other areas of water impoundment. Such work may involve the construction of temporary berms, ~~ditch checks~~ rock check dam, ~~check dams~~, sediment structures (traps, ponds or dams), slope drains, and use of temporary mulches, mats, seeding or other control devices or methods as necessary to control erosion.

642.6-TEMPORARY PIPE, CONTOUR DITCHES, BERMS, SLOPE DRAINS, DITCH CHECKS, SILT FENCE, PREMANUFACTURED DITCH CHECKS AND SUPER SILT FENCE:

DELETE THE TITLE OF SUBSECTION 642.6 AND REPLACE WITH THE FOLLOWING:

642.6-TEMPORARY PIPE, CONTOUR DITCHES, BERMS, SLOPE DRAINS, ~~DITCH CHECKS~~ ROCK CHECK DAM, SILT FENCE, ~~PREMANUFACTURED-DITCH CHECKS~~ AND SUPER SILT FENCE:

642.6.4-Ditch Checks:

DELETE THE TITLE AND CONTENTS OF SUBSECTION 642.6.4 AND REPLACE WITH THE FOLLOWING:

642.6.4-Rock Check Dam (Ditch Checks): A barrier constructed of clean, non-erodible rock or other manufactured devices (i.e. – triangular silt dikes, coir logs, etc.) across a cut or median ditch. ~~Ditch-checks-Rock Check Dams~~ shall be constructed to control velocities, reduce erosion, and aid in sediment control.

642.7-METHOD OF MEASUREMENT:

DELETE THE SECOND PARAGRAPH REPLACE THE FOLLOWING.

Berms constructed prior to suspension of construction operations and slope drains will be measured in linear feet (meters); ~~check dams will be measured by the unit~~; sediment traps, ponds, or dams and sediment removal will be measured by the cubic yard (meter); for sediment dams, risers will be measured by the unit and conduit for principal spillway under the dam will be measured in linear feet (meters) and included under Item 642008-*; seed will be measured by the pound (kilogram); straw, hay and wood cellulose fiber mulch will be measured by the ton (megagram); wood chips or bark mulch will be measured by the cubic yard (meter); fertilizer and agricultural limestone will be measured by the ton (megagram); matting will be measured by the square yard (meter); contour ditching will be measured by the linear foot (meter). Measurements will be made on the surface of the work done when applicable. Asphalt for anchoring mulch or other chemical binders will not be measured separately, but their cost shall be included in the unit price bid for mulch. Cereal rye or cereal wheat added to Type D mixture in fall seeding will not be included for payment but its cost shall be included in the unit prices in 642.9.

DELETE THE FIFTH AND SIXTH PARAGRAPH REPLACE THE FOLLOWING.

~~Ditch-checks-Rock check dams~~ will be measured by the unit. Inlet Protection and Dewatering Device will be paid per each device used.

642.9-PAY ITEMS:

MODIFY NAME OF ITEM 642031 AND DELETE ITEM 642032 (CHECK DAM) FROM THE TABLE.

ITEM	DESCRIPTION	UNIT
642031-*	Ditch Check Rock Check Dam	Each
642032-*	Check Dam	Each

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

**SECTION 663
PAVEMENT MARKINGS**

RENAME THIS SECTION AS FOLLOWS:

**SECTION 663
PAVEMENT MARKINGS AND RUMBLE STRIPS**

663.1-DESCRIPTION:

DELETE THIS SECTION AND REPLACE WITH THE FOLLOWING:

663.1-DESCRIPTION:

663.1.1-Pavement Markings: Pavement markings shall consist of furnishing and installing various types of markings. It shall include, but is not limited to, edge lines, lane lines, center lines, channelizing lines, intersection markings, stripes, curb markings, island markings, and raised markers, or combinations thereof, in accordance with Contract plans and the following specifications or as directed by the Engineer.

All details not specified or shown on the Plans shall conform to the details and requirements set forth in the following publications. These publications shall collectively be referred to as the “pavement marking standards” throughout the remainder of this Section:

1. The WVDOH Standard Details Book, Vol. II, Signing, Signals, Lighting, and Marking, latest issue date
2. The Manual on Uniform Traffic Control Devices for Streets and Highways, latest issue, as printed by the Federal Highway Administration, U.S. Department of Transportation. (Referred to as the MUTCD.)

663.1.2- Rumble Strips: This work consists ~~of furnishing a machine capable~~ of cutting or milling rumble strips on the centerline or edge of roadways in accordance with the details and notes on the plans, or referenced herein, and as directed by the Engineer.

Unless otherwise specified in the plans, edge line rumble strips shall be installed in accordance with sheet PVT2 of the WVDOH Standard Details Book, Vol. I, Drainage, Guardrail, Pavement, Fence, Markers and Mailbox, latest issue date.

The Contractor shall pre-mark the location of the center of each cut, and the beginning and ending points of the sections, prior to the installation of the Rumble Strips. The Engineer shall review and approve the locations.

Rumble Strips shall not be installed on bridge decks, loop detector saw-cut locations, structures, approach slabs or in other areas identified by the Engineer.

The method and equipment for constructing ~~ground in indentations~~ rumble strips shall be selected by the Contractor and shall meet the requirements of 663.5.10.

Rumble Strips shall be constructed within two (2) inches of the required alignment.

Indentations Rumble Strips shall not vary from the dimensions shown on the plans or sheet PVT2, as applicable, by more than 0.10 inch in depth and five percent (5%) in width.

Finished Rumble Strips not meeting the specified tolerances shall be brought within tolerance by either abrasive grinding, or removal and replacement. The corrective method will be selected by the Engineer. Ground surface areas shall be neat and uniform in appearance. The corrective work shall be at the Contractor's expense.

All removed material shall become the property of the Contractor and disposed of in conformance with provisions in Section 415, "Milling of Asphalt Surfaces" of the Standard Specifications or as approved by the Engineer. Rumble Strip slots shall be properly cleaned after installation.

663.5-APPLICATION:

ADD THE FOLLOWING SUBSECTION:

663.5.10- Rumble Strip Equipment: ~~The machine shall consist of a rotary type cutting head with a maximum outside diameter of 12 (twelve) inches (305mm). The cutting tool shall have the cutting head(s) arranged in such a pattern as to provide a relatively smooth cut per milled section without tearing or snagging and be equipped with guides to provide uniformity and consistency in alignment of each cut with respect to the roadway. The strips shall be cut in accordance with the dimensions as detailed on the Plans, and materials resulting from cutting the pavement shall be disposed of and the slots shall be properly cleaned. Equipment utilized for installing Rumble Strips shall be suitable for the application and shall allow for the efficient installation of Rumble Strips that are uniform, consistent, and accurately placed. Cutting equipment shall provide a relatively smooth cut per milled section without tearing or snagging.~~

663.6-METHOD OF MEASUREMENT:

DELETE THIS SECTION AND REPLACE WITH THE FOLLOWING:

663.6-METHOD OF MEASUREMENT:

663.6.1-Pavement Markings: Pavement markings shall be measured complete in place in the units designated below. Length measurements shall exclude gaps. Calibrated and verified odometer measurements will be acceptable as method of measurement on edge lines (mainline only), lane lines, and centerlines only for plan quantities in excess of 10,000 linear feet (3 000 m) or two linear miles (3.2 km).

Island marking will be measured by the square foot (meter) of island area painted.

Type P-2 markers, Type S markers, and Type R-4 markers shall be measured in units of each, completely installed as specified herein. Payment for the installation of Type P-2 and Type S markers shall include payment for the marker lens, regardless of whether the lens is factory or field installed.

Yield Triangle, Handicapped symbol, Bicycle Symbol, Arrow, Lane Letter, and Railroad Crossing Marking intersection markings shall be measured in units of each, completely installed as specified herein. One unit of the Railroad Crossing Marking shall consist of the large “X” and the two “R” letters necessary to install the complete marking in one direction.

663.6.2-Rumble Strips: This work shall be measured for payment by the actual linear feet of Rumble Strips placed and accepted, without regard to the width of the strip. This distance shall be measured longitudinally along the centerline of pavement with deductions for bridge decks, drainage structures, raised pavement markers, loop detector saw-cut locations, and any other sections where Rumble Strips were not installed.

663.7-BASIS OF PAYMENT:

ADD THE FOLLOWING SUBSECTION:

663.7.2-Rumble Strips: The Contract unit price per foot for Rumble Strips will be paid for the pay items listed in Section 663.8. The price shall include furnishing all equipment, tools, labor, and work incidental thereto and also disposal of any waste material resulting from this operation.

663.8-PAY ITEMS:

ADD THE FOLLOWING ITEMS TO THE TABLE:

ITEM	DESCRIPTION	UNIT
663040-*	Edge Line Rumble Strip, “pavement”	Linear Foot (Meter)
663041-*	Centerline Rumble Strip, “pavement”	Linear Foot (Meter)
663042-*	Rumble Strip, ADAB	Linear Foot (Meter)

* Sequence number

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

**SECTION 664
TRAFFIC SAFETY DEVICES**

DELETE THE ENTIRE CONTENTS AND REPLACE WITH THE FOLLOWING:

**SECTION 664
IMPACT ATTENUATORS**

664.1-DESCRIPTION:

This work shall consist of the furnishing, assembly, and installation of Impact Attenuators in accordance with these Specifications, Plans, device manufacturer specifications and Installation Drawings, or as established by the Engineer. All work shall be done in a uniform, workmanlike manner.

All details not specified or not shown on the Plans shall conform to the details and requirements set forth in the following specifications and publications:

- i. American Association of State and Highway Transportation Officials (AASHTO), Roadside Design Guide, latest issue including revisions, hereinafter referred to in this Section as the RDG

664.2-MATERIALS:

Materials furnished shall be of new stock, shall be the product of reputable manufacturers, shall conform to the Specifications, and shall meet the approval of the Engineer. Materials shall conform to the general requirements of subsection 715.41 and the requirements of the following subsections:

MATERIALS	SUBSECTION
Class 1 Impact Attenuator	715.41.1
Class 2 Impact Attenuator	715.41.2

Approved devices are listed on the Division Approved Products List (APL) for Impact Attenuators – MASH.

The design width and tapered or non-tapered characteristics of each device are noted on the APL. In cases where a device with tapered sides would normally be required to properly shield an object, the Contractor may at their option choose to provide and install a Class 1 device with non-tapered sides and a rigid tapered transition from the device to the obstacle being shielded, provided specific criteria are met. Criteria to be met and additional drawings to be included with

the Contractor's Installation Drawing submittal are provided in Appendix A of WVDOH Design Directive 666, Impact Attenuators. In addition, the transition shall be MASH compliant at the same Test Level as is required for the Impact Attenuator. The Contractor shall provide documentation sufficient in the WVDOH's determination to support this upon request.

664.3-INSTALLATION DRAWINGS:

The Contractor shall submit eight (8) sets of installation drawings for all permanent Class 1 and 2 Impact Attenuators for approval prior to installation. Drawings shall be site specific providing an accurate representation of the obstacle being shielded, approach area, concrete pads and backups to be installed, as well as any required transitions. The drawings shall clearly specify required concrete strength, reinforcement requirements, anchoring requirements, connection to existing barrier requirements, as well as the device brand name and model number. The drawings shall include assembly details.

The installation drawings shall also include all applicable details previously described for any rigid transition to be used to achieve a greater width as allowed for in Section 664.2.

Installation drawings will be reviewed and, if approved, stamped and returned to the Contractor. Multiple devices of the same design to be installed under identical conditions may be represented by one (1) set of drawings.

664.4-CONSTRUCTION METHODS:

All Impact Attenuators shall be placed, assembled, and installed in accordance with the manufacturer specifications and Installation Drawings.

Class 1 devices shall be installed on a concrete foundation, this being a bridge deck or concrete pad fully designed and specified by the manufacturer.

If the manufacturer Installation Drawings require a concrete block backup separate from any concrete backup structure constructed under other provisions of the Specifications, the backup shall be constructed by the Contractor in accordance with the Installation Drawing requirements.

If adhesive type anchors are required to anchor the device, the Contractor shall not fully tighten the device anchors until after the adhesive has fully cured.

When installing a Class 2 Impact Attenuator, the Contractor shall assess the need for soil plates in accordance with the recommendations of the manufacturer and utilize such if recommended. Soil plates shall be utilized regardless of manufacturer recommendations if directed by the Engineer.

The nose or impact head of all devices shall be delineated with a striped, retroreflective panel or decal. The retroreflective material shall meet the requirements for fluorescent yellow Type ASTM-XI retroreflective sheeting, as provided elsewhere within the Specifications. The design of the panel or decal shall be in substantial conformance with the XS-15 design provided in the WVDOH Sign Fabrication Details manual, except all right shoulder mounted devices shall have all stripes sloping down and to the left, and all left shoulder mounted devices shall have all stripes sloping down and to the right.

664.5-METHOD OF MEASUREMENT:

Attenuators will be measured as a unit, complete and in place.

664.6-BASIS OF PAYMENT:

The quantities, determined as provided above, shall be paid for at the contract unit price for the items listed below, which prices and payment shall be full compensation for furnishing all the materials and doing all work prescribed in a workmanlike and acceptable manner, including all tools, equipment, supplies, and incidentals necessary to complete. All incidental work and materials for which no basis of payment is provided will be considered as completely covered by the prices bid for the items included in the contract.

664.7-PAY ITEMS:

ITEM	DESCRIPTION	UNIT
<u>664015-*</u>	<u>Impact Attenuator, C-1, TL-2, “Design Width in Inches”</u>	<u>Each</u>
<u>664016-*</u>	<u>Impact Attenuator, C-1, TL-2, 36+”</u>	<u>Each</u>
<u>664020-*</u>	<u>Impact Attenuator, C-1, TL-3, “Design Width in Inches”</u>	<u>Each</u>
<u>664021-*</u>	<u>Impact Attenuator, C-1, TL-3, 36+”</u>	<u>Each</u>
<u>664025-*</u>	<u>Impact Attenuator, C-2, TL-3, 24”</u>	<u>Each</u>

* Sequence number

C ≡ “Class Number” shall be designated as C-1 or C-2

TL ≡ “MASH Test Level” shall be designated as TL-2 or TL-3

“Design Width in Inches” shall be 24”, 30”, or 36”, ~~or 36+~~

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

**SECTION 715
MISCELLANEOUS MATERIALS**

715.41-TRAFFIC SAFETY DEVICES:

DELETE THE SUBSECTION AND REPLACE WITH THE FOLLOWING:

715.41-IMPACT ATTENUATORS:

All Impact Attenuators and associated components furnished shall be crashworthy when assembled, installed, and utilized in accordance with the device manufacturer's instructions. Crashworthy shall be defined as meeting all crash testing performance requirements of MASH at Test Level 2 or 3, as specified in the Plans. This shall include the requirement for detached elements, fragments, or other debris from the device to not penetrate or show potential for penetrating the occupant compartment, or present undue hazard to other traffic, pedestrians, or personnel in a work zone.

All Class 1, 2, and 3 approved devices, as described herein, shall be certified by the manufacturer to meet all applicable requirements contained herein. In addition to requirements contained in the subsections below, this shall include the following:

- i. The device shall perform as designed within the following parameters pertaining to the approach areas to the device. The approach areas shall include the area immediately adjacent to the sides of the device, an area extending fifty (50) ft. in front of the device for front approach impacts, and an area extending fifty (50) ft. to the rear of the device for rear approach impacts:
 - a. Maximum six (6) inch high mountable curb a minimum of eight (8) feet outside of the near face of the device when operating speeds are less than forty-five (45) MPH.
 - b. Maximum four (4) inch high mountable curb a minimum of thirteen (13) feet outside of the near face of the device when operating speeds are forty-five (45) to fifty (50) MPH.
 - c. No curb when operating speeds are greater than fifty (50) MPH.
 - d. Lateral slope 1V:10H or flatter. Lateral slope at the placement location of the device 1V:12H or flatter.
- ii. All components shall be designed, treated, and/or protected to insure long term durability and as-designed performance of the device in all varieties of environmental conditions expected within the State and from deterioration from UV rays. This shall include all metal

components, steel cables, connection hardware, crushable materials and containers for such, hydraulic fluid, piston seals, etc. All steel components shall be galvanized.

Except as otherwise allowed for in the herein, all Impact Attenuators furnished shall be listed on the Division's Approved Products List (APL) "Impact Attenuators – MASH". Impact Attenuators to be furnished shall be defined in the Plans by Class, MASH Test Level, and/or Design Width as further described herein or within Sections 636 and/or 664, with these characteristics of each device noted on the APL.

715.41.1-Class 1 Impact Attenuator: Class 1 Impact Attenuators shall be non-gating Impact Attenuators installed on a concrete pad or bridge deck meeting the manufacturers requirements for permanent applications, or concrete pad, bridge deck, asphalt, base stone, or combination thereof meeting the manufacturers requirements for temporary or emergency applications. Class 1 Impact Attenuators shall be designed to be repairable after impacts within the parameters of those required in MASH, with a substantial portion of the device components being reusable.

Class 1 devices shall consist of a steel base designed to be secured using anchors, associated hardware, and adhesive if required, all of which shall be completely specified by the manufacturer. Class 1 devices shall also consist of a steel framework attached to the base and a mechanism using sacrificial or reusable components designed to dissipate the kinetic energy of vehicles impacting the front of the device head on. Such mechanisms shall utilize cartridges or cylinders designed to be crushed or compressed, steel or other metal components designed to be cut or deformed, devices designed to generate high friction, hydraulic cylinders, or other similar methods. The design of the device may incorporate either proprietary or AASHTO standard versions of the components described. The base and framework shall be designed to typically be reusable except for in the event of severe impacts.

During head on impacts to the front of the device, Class 1 devices shall be designed to collapse rearward with the energy dissipation mechanism bringing the vehicle to a controlled stop. Except for any gating portion at the front of the device, Class 1 devices shall be designed to safely redirect front and rear approaching vehicles diverging off the roadway and impacting into the side of the device. Such vehicles shall be redirected in their original direction of travel and at a low angle of divergence from the side of the device.

Class 1 devices may be designed with a built-in backup mechanism or may be required to be installed with the rear of the device against a solid backup structure such as a concrete block. The manufacturer shall offer and provide various transition designs and components to protect rear approaching vehicles by providing a safe transition from highway industry standard concrete barrier shapes to the rear of the device. The manufacturer shall also offer and provide transition designs and components for transitioning the device to thirty-one (31) inch height double faced w-beam and thrie beam guardrail with off-post splices.

Any portion of the front of a Class 1 Impact Attenuator which is gating shall be no greater than three (3) ft., measured from the nose of the device. The maximum overall length of Class 1 devices, measured from the nose of the device to the rear and not including any transition sections, shall be twenty (20) ft. for MASH Test Level 2 devices and twenty-five (25) ft. for MASH Test Level 3 devices.

The manufacturer shall supply all proprietary components for complete installation of the device, including transition to thirty-one (31) inch height off-post splice double faced w-beam guardrail.

Class 1 Impact Attenuators shall be designed to be repairable by trained maintenance personnel in a reasonable time frame when subjected to impacts similar in nature to those described in the MASH criteria without requiring removal and repairs to the device off-site.

715.41.2-Class 2 Impact Attenuator: Class 2 Impact Attenuators shall be a non-gating Impact Attenuator designed to be anchored into soil using driven or drilled support posts, and to be transitioned to thirty-one (31) inch height double faced w-beam guardrail with off-post splices without modification. Below grade components of Class 2 Impact Attenuators such as post sleeves and soil plates shall be reusable after impacts within the parameters of those required in MASH.

Class 2 devices shall consist of support posts, a steel impact head, steel side rails, a mechanism using sacrificial or reusable components designed to dissipate the kinetic energy of vehicles impacting the front of the device head on, and any other components required for the device such as post blockouts, post sleeves, soil plates, tension struts, cables, etc. The kinetic energy dissipation mechanism may include those described in Section 715.41.2 or other similar methods. The design of the device may incorporate either proprietary or AASHTO standard versions of the components described. In cases where the manufacturer offers options in regard to support post material and/or post sleeves, steel posts with post sleeves shall be supplied and utilized.

During head on impacts to the front of the device, Class 2 devices shall be designed to collapse rearward with the energy dissipation mechanism bringing the vehicle to a controlled stop. Except for any gating portion at the front of the device, Class 2 devices shall be designed to safely redirect front and rear approaching vehicles diverging off the roadway and impacting into the side of the device. Such vehicles shall be redirected in their original direction of travel and at a low angle of divergence from the side of the device.

The manufacturer shall supply all proprietary components for complete installation of the device, including transition to thirty-one (31) inch height off-post splice double faced w-beam guardrail.

Any portion of the front of a Class 2 Impact Attenuator which is gating shall be no greater than twenty (20) ft., measured from the impact head of the device. The maximum overall length of Class 2 devices measured from the impact head of the device to the off-post splice connection with the thirty-one (31) inch height w-beam to be transitioned to shall be fifty (50) feet.

715.41.3-Class 3 Impact Attenuator: Class 3 Impact Attenuators shall be a gating Impact Attenuator designed to be placed on various pad foundation types meeting the manufacturer's requirements, not require anchoring, and to shield wide objects.

During head on and side impacts into the device, Class 3 devices shall be designed to collapse and capture the vehicle, bringing it to a controlled gradual stop by transfer of momentum into an expendable mass of material.

Sand Barrel Class 3 Impact Attenuators shall be designed and provided in standard industry weights, which shall include 200 lb., 400 lb., 700 lb., 1400 lb., and 2100 lb. Sand Barrels shall be approximately thirty-six (36) inches in diameter and shall be designed to facilitate the

drainage of excess sand moisture out of the sand mass. The manufacturer shall have and make available complete instructions on proper array design and layout, as well as pre-designed layouts for various operating speed and object width combinations. The manufacturer shall also provide material, weight/volume, ratio, and mixing specifications for the sand and anti-freeze agent(s) to be added to the barrels. Manufacturer specifications in regard to anti-freeze agents shall be in compliance with all applicable environmental laws and regulations.

Class 3 Impact Attenuators shall not be supplied for permanent installations and are approved only for temporary work zone or emergency use under applicable circumstances.

715.41.4-Truck Mounted Attenuator (TMA) and Trailer Truck Mounted Attenuator (TTMA): TMA's and TTMA's shall be devices designed for attachment to the rear of a large commercial vehicle, intended to offer protection for the occupants of a work zone and to lessen the severity of a rear end impact for the occupants of the impacting vehicle and the commercial host vehicle.

TMA's and TTMA's shall consist of a metal framework and shall incorporate a mechanism designed to dissipate the kinetic energy of vehicles impacting the front of the device head on using sacrificial or reusable component, typically cartridges or cylinders designed to be crushed or compressed, steel or other metal components designed to be cut or deformed, devices designed to generate high friction, or other similar methods.

During head on impacts to the front of the device, TMA and TTMA devices shall be designed to collapse rearward with the energy dissipation mechanism bringing the vehicle to a controlled stop.

TMA's shall be designed to be attached directly to and cantilevered off the rear of the host vehicle. TTMA's shall incorporate an axle and shall be designed to be towed behind the host vehicle.

The manufacturer shall make adequate requirements and recommendations available for necessary modifications to be made to host vehicles to adequately support the device. The manufacturer shall also make available recommended buffer distances for the devices based on expected post impact roll-ahead distances taking into consideration a variety and range of factors such as host vehicle weight, host vehicle speed, impacting vehicle speed, vertical grade, etc.

TMA's and TTMA's shall be equipped with all necessary safety features required for legal highway use such as brake lights, taillights, turn signals and ICC bar lights. The front of the device shall be adequately delineated to provide high conspicuity for approaching traffic.

715.41.5- Product Submission and Approval: Impact Attenuator devices described in Sections 715.41.1 through 715.41.4 to be considered for inclusion on the Division's Impact Attenuator - MASH APL shall be submitted to the Materials Division following the current procedures specified in MP 106.00.02.

The manufacturer should include all relevant documentation and information, including but not limited to product data sheets and bulletins, product specifications and recommendations, product manuals, engineering drawings, and any other requested information.

Devices shall be demonstrable to be crashworthy by means specified in official guidance issued by the WVDOT.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

**SECTION 715
MISCELLANEOUS MATERIALS**

715.9-WARNING DEVICES:

715.9.3-Channelizing Devices and Auxiliary Barriers:

715.9.3.1-Drums:

DELETE BULLET v. AND REPLACE WITH THE FOLLOWING:

- v. Device base design shall be solid rubber snap-on, or sand filled plastic snap-on, or tire ring collar. ~~Ring type bases shall not be approved.~~ Note, if a manufacturer submits a tire ring collar base model drum to the WVDOH for evaluation, the manufacturer shall be required to certify in their MASH self-certification letter that the device is in compliance with the crash performance requirements of MASH with up to two (2) tire ring collars used with the device.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

**SECTION 604
PIPE CULVERTS**

604.2-MATERIALS:

DELETE CONCRETE END SECTION FOR ARCH, ELLIPTICAL, OR ROUND PIPE FROM THE TABLE AND ADD THE FOLLOWING ITEM TO THE TABLE:

MATERIAL	SUBSECTION
Concrete End Section for Arch, Elliptical, or Round Pipe	714.8
Concrete Safety Slope End Section	714.8

ADD THE FOLLOWING ITEM TO THE TABLE:

604.14-PAY ITEMS:

DELETE ITEMS ~~S 604038, 604040,~~ AND 607473 FROM THE TABLE AND REPLACE 60471 WITH THE FOLLOWING:

604.15-PAY ITEMS:

ITEM	DESCRIPTION	UNIT
604038-*	“size” Reinforced Concrete Pipe End Section	Each
604040-*	“size” Reinforced Concrete Pipe Arch End Section	Each
604071-*	“size” Reinforced Concrete Pipe Safety Slope End Section <u>for Round Pipe</u>	Each
604073-*	“size” Elliptical Reinforced Concrete Pipe Safety Slope End Section, X	Each

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 714

CONCRETE AND PLASTIC PIPE

714.8-CONCRETE END SECTIONS:

DELETE THE TITLE AND CONTENTS OF SUBSECTION 714.8 AND REPLACE WITH THE FOLLOWING:

714.8-CONCRETE SAFETY SLOPE END SECTIONS:

Precast ~~reinforced~~ concrete safety slope end sections shall conform to the requirements of the cited Specifications for the pipe to the extent to which they apply and to the details shown on ~~the Plans~~ Standard Detail Drawing DR 4.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SPECIAL PROVISION

FOR

STATE PROJECT NUMBER: _____

FEDERAL PROJECT NUMBER: _____

**SECTION 105
CONTROL OF WORK**

105.2 – PLANS AND WORKING DRAWINGS:

ADD THE FOLLOWING:

105.2.2–Dates of Governing Specifications and Standard Details: These provisions are intended to provide guidance as to which edition of the West Virginia Department of Transportation, Division of Highways, Standard Specifications Roads and Bridges and Volumes I and II West Virginia Department of Transportation, Division of Highways, Standard Details Books are applicable to this Project.

105.2.2.1–Standard Specifications and Supplemental Specifications Date: The West Virginia Department of Transportation, Division of Highways, Standard Specifications Roads and Bridges, adopted 2017, as amended by West Virginia Department of Transportation, Division of Highways ~~2020–2021~~ Supplemental Specifications, shall apply for this project.

Specifications can be found on the following website:
<http://www.transportation.wv.gov/highways/contractadmin/specifications/>

105.2.2.1.1–Item Number and Description: The item number and description shown in the Schedule of Items will govern over item number and/or description shown within the plans.

105.2.2.2–Standard Details Dates: The West Virginia Department of Transportation, Division of Highways, Standard Details Volume I, dated May 2016 and Volume II, dated January 2019 shall apply to this project.

Standard Detail drawings can be found on the following website:
<http://www.transportation.wv.gov/highways/engineering/pages/publications.aspx>

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SPECIAL PROVISION

FOR

STATE PROJECT NUMBER: _____

FEDERAL PROJECT NUMBER: _____

**SECTION 636
MAINTAINING TRAFFIC**

636.20-TEMPORARY TRAFFIC SIGNAL(S) OR TEMPORARY LIGHTING:

ADD THE FOLLOWING:

636.20.1-Temporary Closed Circuit Television (CCTV): This work shall consist of furnishing, installation, maintaining, and removing a fully-installed and operational temporary video camera (CCTV) system. The Contractor shall furnish and assemble all necessary materials and equipment for each CCTV as described below to provide a complete operational system that can be viewed and operated by those with appropriate permissions.

1. The CCTV shall include a Pan-Tilt-Zoom (PTZ) CCTV Camera, autonomous (24/7/365) and meet the requirements of this special provision. This item shall also include furnishing software and interfaces required to provide streaming video with PTZ controls to the WV DOH TMC as well as include a public web page for the CCTV units on this project for the general public to view streaming video in a format approved.
2. CCTV assembly shall be mounted to a round wood pole with a minimum height of 45 feet. All wood poles shall meet the requirements of Section 710.8 of the Standard Specifications.
3. ~~All equipment and materials shall be new.~~ All equipment shall be the latest model and shall contain the latest firmware unless it can be shown that an earlier version is required for compatibility with existing WVDOH communication protocols.
4. The cabinet/enclosure shall be a NEMA 4X stainless steel enclosure. The cabinet/enclosure shall have a continuously hinged door on one side, and shall be provided with a standard, #2 keyed brass lock. The enclosure shall be sized by the contractor that will provide ample space for all electrical connections, bus bar, surge protection, cellular

modem/antennae, H.264 encoder, and all other functional equipment pertinent to the operation of the CCTV.

5. The Contractor shall provide a separate power conductor from the nearest power control station or other pertinent power service as approved by the Engineer. Any conductor deriving power from a light source shall utilize a separate conductor to bypass any photocell control.
 - a. The Contractor shall size this conductor so that there is less than a 5% power loss from the control station to the CCTV.
 - b. The CCTV power conductor shall be distinctive from all other conductors within the existing raceway(s).
6. Unless otherwise specified, ground wiring shall be solid bare copper #4 AWG and securely connected inside enclosures with #4 AWG copper clamp connectors. Nuts and washer securing the wire are not acceptable. All grounding shall meet the National Electric Code. Ground wires shall be exothermically welded to the ground rods. Ground rod clamps are not acceptable. The following devices shall be grounded:
 - a. Cabinet
 - b. Camera system
 - c. CommunicationsThe resistance to ground shall be less than 10 Ohms as measured with a ground resistance meter or equivalent.
7. All cellular communications (SIM cards) will be the responsibility of the Contractor, provided by the Department along with ~~the~~ all associated cellular costs. The CCTV, video interfaces, all appurtenances, software and documentation, training of Department and Project personnel and the acceptance testing of all equipment and interfaces shall be included. All SIM cards must be compatible with our ATMS.
8. The CCTV shall be equipped with a 4G/LTE digital cellular modem operational on a commercial cellular communication network ~~that accepts Department provided SIM cards~~ and provides reliable statewide broadband connectivity.
9. The Contractor shall provide a CCTV that includes all software required to provide communications with the TMC, provide remote configuration of the CCTV from the TMC, and permits full IP PTZ camera control and viewing at the TMC.
10. The Contractor shall set up the IP addressable CCTV camera to stream at a minimum of 1 frames per second and shall work with WV DOH TMC and IT Departments to integrate the camera into their current systems and to provide the highest image resolution achievable utilizing the wireless link.
11. The camera shall provide the ability to control and monitor CCTV video over wireless IP networks.
12. The zoom ratio shall be 12x Optical Minimum.

13. The camera shall have an auto focus with manual override capability.
14. The CCTV camera shall display up to four preset zones, each with a unique and descriptive title.
15. The Contractor shall program each CCTV camera with a minimum of two preset zones: Upstream and Downstream Traffic.
16. The CCTV camera shall display a minimum of 20 programmable characters for on-screen camera ID, location & titles.
17. The camera PT unit shall provide a proportional speed Pan/Tilt capability, where the speed decreases automatically as the zoom level increases.
18. The camera PT unit shall provide a 360° continuous pan rotation without cable interference or tangling.
19. The camera shall provide a minimum of 720H x 480V High Definition pixels.
20. The camera shall provide compressed video output compliant with H.264 (MPEG-4 Part 10/AVC) and Motion JPEG standards.
21. The camera shall have Color and Black & White video image display modes with both automatic and manual selection. The camera shall transition automatically to a Black & White mode (when in automatic mode) when the luminance reaches a predefined threshold (used during evening hours or periods of low luminance).
22. The CCTV camera image display shall vary between day and night by reverting to quasi-monochrome operation at night for increased sensitivity. At all times the camera shall provide a full motion video output with controllable frame rate of up to 30 frames per second for both H.264 and Motion JPEG. Long-term image integration is not acceptable.
23. The CCTV camera shall incorporate electronic image stabilization to reduce the effects of vibration and wind gusts on the displayed video image.
24. The camera shall include both automatic iris control and an override for manual iris adjustments.
25. The camera shall have password protection, IP address filtering, HTTPS encryption, IEEE 802.1X network access control, digest authentication, user access log.
26. The camera shall provide video access using a standard web browser to view live camera video.

27. The camera shall provide a RJ-45 Ethernet 10BASE-T/100BASE-TX connector that is IP66-rated.
28. The camera manufacturer shall have a minimum of 12 installed units of CCTV cameras at outdoor installations for ITS applications, operational for at least six (6) months. Qualification list of installations for the camera vendor shall be submitted at the preconstruction meeting.
29. Unless otherwise specified, the equipment inside the CCTV shall remain functional with outside temperatures ranging from -34° C to 74° C (-29° F to 165° F).
30. Unless otherwise specified, the equipment inside the CCTV shall remain functional with an outside relative humidity from 0-100%.
31. The maximum total weight for the combined CCTV camera assembly shall be 5 lbs. or less.
32. The power input requirements for the CCTV camera shall be sufficient to power the IP CCTV camera and heater to permit camera operation throughout the temperature range defined above.
33. The Contractor shall furnish all necessary software to permit WV DOH to configure the IP CCTV camera. All software installed shall be licensed for use throughout WV DOH.
34. The Contractor shall setup the CCTV cameras to allow real-time viewing of the camera video, pan/tilt/zoom control, camera control, and camera configuration and setup using the latest version of Internet Explorer. The Department will provide and setup the IP address (or host name) of the camera as well as provide usernames and passwords for the Contractor to configure each CCTV. The Contractor shall provide video for the WV DOH TMC web page per the requirements below unless directed otherwise by the WV DOH ITS Engineer.
35. The video from the cameras shall be provided in a format able to be displayed at the WV DOH TMC and on the project web page at a rate of at least 1 frame per second.
36. The system shall allow WV DOH authorized personnel to control the camera through a web-based interface to the camera's pan-tilt-zoom controls.
37. The video shall be viewable through the web page and shall have a minimum viewing size of 720x480 pixels.
38. The video format shall provide a stream to permit the video to be posted to the WV DOH TMC.
39. The Cellular 4G/LTE Gateway Modem shall provide full duplex data communications between the CCTV installation sites and the WV DOH TMC ~~over WV DOH's cellular~~

~~carrier. The Department shall make all provisions for setting up cellular service and configuring all equipment for end-to-end communications and provide that to the Contractor and assist with any questions related to this effort. Approved modems can be located on the WVDOH APL.~~

40. The 4G/LTE Gateway Cellular Modem shall be compatible with the data communications equipment installed at the CCTV installation sites and at the WV DOH TMC.
41. The 4G/LTE Gateway Cellular Modem shall include the following data communications security features:
 - a. IP Sec VPN encryption technology; 3DES and AES encryption, typical
 - b. An integrated application inspection firewall
 - c. GRE tunneling
 - d. HTTPS
 - d.e.DMZ capability
42. The 4G/LTE Gateway Cellular Modem shall include an antenna input for reception of GPS positioning and timing information.
43. The 4G/LTE Gateway Cellular Modem may include an integrated 4-Port Hardened Ethernet Switch for future use.
44. The 4G/LTE Gateway Cellular Modem shall meet or exceed the following power and environmental requirements:
45. The modem shall have an operating temperature range of -13°F to 140° F and a humidity range of 5% to 95% non-condensing.
46. Antenna and Antenna Cabling Requirements for the 4G/LTE Gateway Cellular Modem:
47. The Contractor shall provide and install an external omni-directional 4G/LTE antenna and an external GPS antenna for the 4G/LTE Gateway Cellular Modem.
48. The antennas shall be mounted ~~on the wood pole~~ in a manner to provide continuous cellular communications and good reception of cellular signals.
49. Prior to delivery of the equipment ~~and after receipt of the Department furnished and activated SIM cards,~~ it is expected that the Contractor will conduct in-house factory testing of all the individual components as well as an end-to-end testing of the entire system including hardware, communication and software. The Contractor shall provide appropriate proof of testing prior to the delivery of the equipment.
50. The operational testing phase is intended to provide WV DOH personnel the opportunity to independently operate the CCTV based upon procedures provided at the training session by the Contractor. The operational testing phase shall be completed within five (5) calendar days upon completion of the training sessions. During this period, the Contractor shall

provide technical support to address any questions or concerns encountered by WV DOH while operating the equipment. Any equipment issues and/or malfunction identified by WV DOH, either with the hardware, communication or software, shall be resolved by the Contractor to the satisfaction of WV DOH within 10 business days. Any equipment malfunction identified by WV DOH not resolved by the Contractor may result in that equipment being identified as being “not accepted” by WV DOH.

636.25-PAY ITEMS:

ADD THE FOLLOWING ITEM TO THE TABLE:

ITEM	DESCRIPTION	UNIT
636035-001	Temporary CCTV	Month

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 307

CRUSHED AGGREGATE BASE COURSE

307.2-MATERIALS:

DELETE THE CONTENTS OF THE SUBSECTION AND REPLACE WITH THE FOLLOWING:

The crushed aggregate base course shall be composed of materials meeting the requirements of 704.6 for the class shown on the Plans ~~except that 704.6.3 shall not apply.~~

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

**SECTION 601
STRUCTURAL CONCRETE**

601.2–MATERIALS:

ADD THE FOLLOWING TO THE TABLE:

MATERIAL	SECTION OR SUBSECTION
<u>Concrete Sealer</u>	<u>707.12</u>

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION**DIVISION OF HIGHWAYS****SUPPLEMENTAL SPECIFICATION****FOR****SECTION 603****PRESTRESSED CONCRETE MEMBERS****603.15-PAY ITEMS:**

DELETE ITEMS 603020 AND 603021 FROM THE TABLE AND REPLACE WITH THE FOLLOWING:

ITEM	DESCRIPTION	UNIT
603020-*	"size" Prestressed Concrete Deck Panel	Linear <u>Square</u> Feet (Meter)
603021-*	"size" Precast Concrete Deck Panel	Linear <u>Square</u> Feet (Meter)

* Sequence number

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

**SECTION 636
MAINTAINING TRAFFIC**

636.19-PORTABLE MESSAGE SIGNS:

636.19.4-Placement:

DELETE THE CONTENTS OF THE SUBSECTION AND REPLACE WITH THE FOLLOWING:

Portable message signs that are not adequately shielded from impacts by utilizing barriers or terrain as described herein to the satisfaction of the Engineer shall be operational at all times to provide clear visibility. This shall include time periods allowed herein when such devices are temporarily no longer needed to serve their intended function of contributing to the efficient or safe operation of the work zone. In such cases the Contractor shall modify the speed displayed on the static speed limit sign accordingly if the speed limit in effect through the work area is changed, and changeable message signs shall be set to flashing warning mode or shall display an alternative generic message approved by the Engineer if a specific informational message is not currently required. In such cases, if the device is not expected to be needed for an entire daylight period or for more than four (4) hours at night, the device shall be temporarily relocated to a shielded location or other location off of the shoulder, either of which shall be approved by the Engineer.

Placement of and messages displayed on portable message signs shall be approved by the Engineer. A changeable message sign and a speed monitoring trailer are not to be placed where they conflict with one another.

Plan placement locations may be adjusted as needed in the field, with the Engineer's approval, in order to achieve greater advance sight distance and/or to utilize other existing devices or terrain features such as temporary barrier, guardrail, or benches to shield the device from impacts. A minimum sight distance of 800 feet should be achieved if possible, provided the device will maintain the operational function as intended by the placement location shown in the plans. Devices placed behind concrete barriers or guardrail should be placed at and behind the downstream end of such features if possible.

The approach to all portable message signs not adequately shielded from impacts to the satisfaction of the Engineer shall be delineated with traffic cones, channelizer cones, or drums. The delineation devices shall be tapered from the outside edge of the paved shoulder, or outside edge of the device if no paved shoulder exists, at a spacing of 25-feet. The length of the taper

shall be 150-feet and shall end 50-feet in advance of the device. The remaining 50-feet leading up to the device shall be delineated with a minimum of three (3) additional delineation devices placed inside of the inside edge of the device and tangent to the roadway.

Speed monitoring trailer systems shall be located within the area of the reduced work zone speed limit, but shall not be located within or before a transition or taper.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 704

STONE AND CRUSHED AGGREGATE

704.6-AGGREGATE FOR BASE OR SUBBASE:

REMOVE TABLE 704.6.2A AND 704.6.2B FROM WITHIN 704.6.3 AND MOVE TO END OF SUBSECTION 704.6.2

704.6.2-Gradation, Quality, and Crushed Particle Requirements: Material shall be sampled in accordance with MP 700.00.06, Aggregate Sampling Procedures.

When gravel is used in an unstabilized condition and in combination with other types of aggregate, it shall produce a combined material having a minimum of 80 percent one-face fracture as determined by weight of particles retained on the No. 4 (4.75 mm) sieve. When gravel is used in an unstabilized condition and alone, it shall have a minimum of 80 percent one-face fracture as determined by weight of particles retained on the No. 4 (4.75 mm) sieve.

TABLE 704.6.2A-GRADATION REQUIREMENTS

Gradation Amounts Finer Than Each Laboratory Sieve (Square Openings), % By Weight										
<u>Aggr.</u> <u>class</u>	<u>8"</u> <u>(200)</u>	<u>2½"</u> <u>(63)</u>	<u>2"</u> <u>(50)</u>	<u>1½"</u> <u>(37.5)</u>	<u>1"</u> <u>(25)</u>	<u>¾"</u> <u>(19)</u>	<u>#4</u> <u>(4.75)</u>	<u>#40</u> <u>(425 µm)</u>	<u>#100</u> <u>(150 µm)</u>	<u>#200</u> <u>(75 µm)</u>
<u>1</u>				<u>100</u>		<u>50-90</u>	<u>20-50</u>	<u>5-20</u>		<u>0-7.0</u>
<u>2</u>				<u>100</u>		<u>80-100</u>	<u>35-75</u>	<u>10-30</u>		<u>0-10.0</u>
<u>3</u>				<u>100</u>		<u>50-90</u>	<u>20-50</u>	<u>5-20</u>		<u>4.0-12.0</u>
<u>4</u>				<u>100</u>		<u>50-95</u>	<u>20-60</u>	<u>5-35</u>		
<u>5</u>			<u>100</u>				<u>30-90</u>			<u>0-25.0</u>
<u>6</u>				<u>100</u>		<u>50-100</u>	<u>25-70</u>	<u>10-45</u>	<u>3-28</u>	
<u>7</u>	<u>90-100</u>		<u>0-5</u>	<u>with intermediate sizes between 6"</u> <u>(150 mm) and 4" (100 mm) represented</u>						
<u>8</u>				<u>100</u>		<u>80-100</u>	<u>35-75</u>	<u>10-40</u>		<u>4.0-14.0</u>
<u>9</u>		<u>100</u>		<u>80-95</u>		<u>50-70</u>	<u>20-40</u>			<u>0-8.0</u>
<u>10 *</u>					<u>100</u>	<u>70-100</u>	<u>30-75</u>	<u>8-40</u>		<u>4.0-20.0</u>

* Crusher Run Material Only

TABLE 704.6.2B-QUALITY REQUIREMENTS

<u>Aggr. class</u>	<u>Los Angeles Abrasion, Percent Max.</u>	<u>Sodium Sulfate Soundness, Percent Max.</u>	<u>Liquid Limit Max.</u>	<u>Plasticity Index Max.</u>	<u>Deleterious Material, Percent Max.</u>
<u>1</u>	<u>50</u>	<u>12</u>	<u>25</u>	<u>6</u>	<u>5</u>
<u>2</u>	<u>50</u>	<u>12</u>	<u>25</u>	<u>6</u>	<u>5</u>
<u>3</u>	<u>50</u>	<u>12</u>	<u>25</u>	<u>6</u>	<u>5</u>
<u>4</u>	<u>Note 1</u>		<u>25</u>	<u>6</u>	<u>5</u>
<u>5</u>			<u>25</u>	<u>6</u>	<u>5</u>
<u>6</u>			<u>25</u>	<u>6</u>	<u>5</u>
<u>7</u>		<u>30</u>			<u>10 (by visual observation)</u>
<u>8</u>	<u>50</u>	<u>12</u>	<u>25</u>	<u>6</u>	<u>5</u>
<u>9</u>	<u>50</u>	<u>12</u>	<u>25</u>	<u>6</u>	<u>5</u>
<u>10</u>	<u>50</u>	<u>12</u>	<u>25</u>	<u>6</u>	<u>5</u>

Note 1: The Los Angeles Abrasion value of aggregate comprising the base course shall be treated in the manner hereinafter set forth to determine the specification requirement for the item:

<u>Los Angeles Abrasion Value Assigned to the Base Course Aggregate</u>	<u>LA<50</u>	<u>None</u>
	<u>50<LA<65</u>	<u>Top 4 inches (100 mm)</u>
	<u>65<LA<80</u>	<u>Top 6 inches (150 mm)</u>
	<u>80<LA</u>	<u>Top 8 inches (200 mm)</u>

704.6.3-Sampling, Testing and Acceptance Procedure: Material shall be sampled in accordance with MP 700.00.06 Aggregate Sampling procedures. Frequency of sampling and testing and plotting of gradation test data will be in accordance with established Division procedures.

Material failing to comply with the Specification requirements when sampled, tested, and evaluated in accordance with the above Division procedures shall be removed and replaced at the Contractor's expense, or, at the option of the Engineer, may be left in place with reduced payment.

TABLE 704.6.2A GRADATION REQUIREMENTS

<u>Gradation Amounts Finer Than Each Laboratory Sieve (Square Openings), % By Weight</u>										
<u>Aggr. class</u>	<u>8" (200)</u>	<u>2 1/4" (63)</u>	<u>2" (50)</u>	<u>1 1/2" (37.5)</u>	<u>1" (25)</u>	<u>3/4" (19)</u>	<u>#4 (4.75)</u>	<u>#40 (425 µm)</u>	<u>#100 (150 µm)</u>	<u>#200 (75 µm)</u>
<u>1</u>				<u>100</u>		<u>50-90</u>	<u>20-50</u>	<u>5-20</u>		<u>0-7.0</u>
<u>2</u>				<u>100</u>		<u>80-100</u>	<u>35-75</u>	<u>10-30</u>		<u>0-10.0</u>
<u>3</u>				<u>100</u>		<u>50-90</u>	<u>20-50</u>	<u>5-20</u>		<u>4.0-12.0</u>
<u>4</u>				<u>100</u>		<u>50-95</u>	<u>20-60</u>	<u>5-35</u>		
<u>5</u>			<u>100</u>				<u>30-90</u>			<u>0-25.0</u>
<u>6</u>				<u>100</u>		<u>50-100</u>	<u>25-70</u>	<u>10-45</u>	<u>3-28</u>	

7	90-100		0-5	with intermediate sizes between 6" (150 mm) and 4" (100 mm) represented					
8				100		80-100	35-75	10-40	4.0-14.0
9		100		80-95		50-70	20-40		0-8.0
10*				100	70-100	30-75	8-40		4.0-20.0

* ~~Crusher Run Material Only~~

TABLE 704.6.2B-QUALITY REQUIREMENTS

Aggr. class	Los Angeles Abrasion, Percent Max.	Sodium Sulfate Soundness, Percent Max.	Liquid Limit Max.	Plasticity Index Max.	Deleterious Material, Percent Max.
1	50	12	25	6	5
2	50	12	25	6	5
3	50	12	25	6	5
4	Note 1		25	6	5
5			25	6	5
6			25	6	5
7		30			10 (by visual observation)
8	50	12	25	6	5
9	50	12	25	6	5
10	50	12	25	6	5

~~Note 1: The Los Angeles Abrasion value of aggregate comprising the base course shall be treated in the manner hereinafter set forth to determine the specification requirement for the item.~~

Los Angeles Abrasion Value Assigned to the Base Course Aggregate	LA ≤ 50	None
	50 < LA ≤ 65	Top 4 inches (100 mm)
	65 < LA ≤ 80	Top 6 inches (150 mm)
	80 < LA	Top 8 inches (200 mm)

Stabilization shall be accomplished with bituminous material or Portland cement in accordance with the applicable sections of these Specifications. When the depth indicated above exceeds the Plan depth for the item, the depth to be stabilized shall be the Plan depth. In the event the Contractor elects to stabilize the material, no separate payment will be made for the cost of such stabilization.

If aggregates are blended to produce the base course material, the Los Angeles Abrasion Value used to determine the stabilization requirements shall be the highest value obtained from testing the individual components of the blend.